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THE PRACTICAL USE OF DISINFECTANTS.¹

By H. E. HASSELTINE, Passed Assistant Surgeon, United States Public Health Service.

The subject of disinfection is one of great interest to health officials because it is inseparably connected with the control of communicable diseases. Each disease of that class depends on the existence of a specific organism of microscopic dimensions, which lives a parasitic life in the body of man or other members of the animal kingdom. On account of the minute size of these organisms, the ordinary mode of defense used against visible foes, mechanical power, is practically useless in the fight against infectious disease. For many centuries man lived in ignorance of these invisible enemies, fleeing before them when their effects made their presence known, or perhaps falling a helpless prey. When human intelligence ultimately demonstrated the presence of certain bacteria in the deadly epidemic diseases, that same intelligence began to seek for a means of defense.

The ancients used heat and sulphur for purposes probably more or less allied to the disinfection of the present day. When bacteriology became a field for scientific work, in the early eighties, the rational use of disinfectants began; since then they have been much used and much abused. In many instances it has been assumed that a disinfectant which is effective under the conditions of the experiments which proved its efficiency, is effective under other conditions. We are now beginning to find out that, probably, we have assumed too much concerning the action of disinfectants. There are two terms, often used synonymously, to which I desire to draw your attention at this point, viz, *disinfection* and *fumigation*. While they may be synonymous in certain cases, they are not necessarily so.

To *disinfect* is to free from infectious or contagious matter; to make innocuous. To *fumigate* is to apply smoke, gas, or vapor.

When we fill the hold of a vessel with sulphur dioxide in the absence of moisture, or with flue gas, or hydrocyanic-acid gas, for the purpose of destroying rats, mosquitoes, or other animal carriers of disease, we fumigate but do not thereby effect disinfection.

¹ Read before Annual Conference of State and Provincial Boards of Health of North America, at Washington, D. C., May 14, 1915.

If sufficient moisture be introduced with the sulphur dioxide, the gas then becomes a disinfectant vapor and attacks bacteria. A similar action takes place when formaldehyde gas is used under proper conditions. Therefore, disinfection and fumigation do not always mean the same thing.

In this paper, measures which attack the specific cause of disease directly will be considered as disinfecting measures; and as fumigating measures those which, by the use of gas, smoke, or vapor, attack the specific cause indirectly, through the destruction of intermediate hosts, or carriers other than man, such as mosquitoes, rats, fleas, flies, etc.

Bacteria, as well as men, have a "birth" rate and a death rate; both rates depend on environment. The birth rate is high under favorable conditions, and falls as the favorable conditions decrease. If the conditions continue unfavorable, a point is reached where the death rate exceeds the birth rate, and, unless more favorable environment is encountered, extinction is the inevitable result.

The natural processes of senile decay and death apply to the low minute organisms as well as to the more highly developed larger ones.

Hence, it follows that, within certain limits, we will have a natural disinfection, provided we wait long enough and the environment in which the organisms exist is unfavorable to their birth rate.

Artificial disinfection, or *disinfection*, as we call it, is the term applied to those processes which we use to increase the death rate of organisms in order to exterminate them in a shorter time than the natural processes will require.

It should be remembered that, whatever may be the death rate under any given conditions, it will require a proportionately longer time to kill the last few organisms. For instance, if there be 100 organisms present and the death rate be 75 per cent per minute, at the end of one minute there will be 25 organisms left; at the end of two minutes, approximately 7; at the end of three minutes, approximately 2; at the end of four minutes, less than 1. From a strictly mathematical point of view, absolute sterility will never be reached, but practically at the end of four minutes, the organisms being reduced to less than one, and a fraction of an organism being unable to germinate, we have reached a point which we call disinfection. This is the point the sanitarian is always striving for.

The questions which confront the sanitarian are: When shall disinfection be done, what agent shall be used, and how shall it be applied?

As regards the time when disinfection is to be done, we may consider two general periods, viz, during the disease, and after the case is terminated by recovery, death, or removal to other quarters.

1. *Use of disinfectants during the course of disease.*—All agree that disinfectants can be used with the greatest effect at the bedside of the patient. If done properly the necessity for terminal disinfection is lessened or perhaps removed. The patient is the source of infection. In most of the infectious diseases he is continually giving off virulent organisms in his secretions and excretions. These should be disinfected by proper means as soon as possible after being discharged; also all linen, bedding, dishes, and other utensils which necessarily come in contact with the patient. In some diseases it is not necessary to disinfect all discharges, though in case of doubt the errors should be made on the side of safety. In typhoid fever the feces and urine are highly infectious, but sputum, vomitus, and sweat may contain the bacilli and should also be treated. In such diseases as diphtheria the chief avenues by which the infection is given off are in the secretions of the nose and throat, rarely of the ear, and in the expired air as droplet infection. These discharges should be received on cheap fabrics that can be used once and then destroyed. The bath water used in all cases of infectious disease should be disinfected. Perhaps it is going too far to insist on the disinfection of all discharges of patients suffering from infectious disease, regardless of what the disease may be, though such a course would be preferable to treating one class of excretions and leaving untreated others which might spread the infection.

The necessity of disinfecting bed linen, towels, dishes, and other utensils will be apparent. The patient, being surrounded by infection, can not avoid transferring it in some degree to everything he touches or handles.

To be efficient this disinfection must be done at the bedside or at least in the sick room. Picture, if you can, the patient, the source of infection, as being in the small end of a funnel and the infection spreading through the flaring bell. If you meet it at the beginning of the flare you can effectively stop it; if you let it go a little further the area over which it has spread increases rapidly, until finally it is so widespread that it is practically beyond control, and were it not for the natural disinfection already referred to the results might be appalling.

It should be stated that the proper use of disinfectants in the sick room is more easily described than carried out. If a trained nurse be in attendance it is comparatively easy. If a member of the family attend the patient, which is necessary in the majority of cases, a person who has a reasonable amount of intelligence and common sense and is able to understand instructions is desirable.

The selection of an attendant or the adoption of prophylactic measures, especially in children's diseases, can be influenced by appealing to parental responsibility. Many parents if advised as to

certain measures for their own protection scoff at the idea, saying that they are taking the risk. By putting the same idea forward as for the protection of their children they at once consider it seriously.

Regarding the disinfectant to be used at the bedside, each one will have his favorite, which may or may not be efficient. No one agent is ideal, nor can any one be applied in all cases.

The preference of the author is heat in its various forms. When applicable it is always available, efficient, and can be applied with reasonably good effect by persons incompetent to use other agents.

For sputum, nasal or other discharges (which should be received on cheap cloths) incineration is the quickest and easiest method of disinfection. Solutions containing 5 per cent phenol, 1 per cent trikresol, compound cresol solution, or other disinfectant coal tar products, are also efficient. A word of caution about the latter class may be appropriate here. Since the testing of liquid disinfectants by comparison with a standard has come into practice, it has been found that some of the alleged disinfectants have little or no disinfectant power; others run far above the standard. Some run constantly at about the same coefficient, others vary within wide limits. Do not use a substance that is claimed to be a disinfectant unless you have more than the claims of the producers to prove its worth.

For feces and urine, when other agents are not obtainable, a bucket of boiling water (about 1 gallon) added to a stool, which is then covered and allowed to stand till cool, will destroy practically all bacteria except the spore bearers.

A modified method of using heat, described by Prausnitz¹ at the Fifteenth International Congress of Hygiene and Demography, has been tried and confirmed by Linenthal and Jones,² of Boston. It consists of the addition of a small amount of water, preferably hot, to the stool; then fresh quicklime is added. The process of slaking raises and maintains the temperature well above the thermal death point of the typhoid bacillus for some time. Milk of lime is also an excellent disinfectant for feces and urine. The solutions already named for sputum are also effective for dejecta, but care must be taken that fecal masses are broken up to allow contact of the disinfectant with the organisms. The penetrating powers of heat will reach the interior of these masses, while the solutions may not.

Bath water used on a patient, though frequently neglected, is easy to disinfect. Heating it is very efficient. The addition of a disinfectant, such as crude carbolic acid, or other similar product, readily destroys pathogenic organisms.

¹ Prausnitz, M. Transactions of Fifteenth International Congress of Hygiene and Demography, 1913, vol 4, p. 30.

² Linenthal, H., and Jones, H. W. Boston Med. and Surg. Jour., vol. 170, Jan. 8, 1914, p. 43.

For the disinfection of soiled bedding and clothing the ideal treatment is removal to a steam disinfecting chamber; but in rural communities this is not always possible. Immersion in boiling water for five minutes, or in 5 per cent carbolic acid, or other equivalent disinfectant solution, for two hours is efficient. Mattresses can be disinfected by steam under pressure, but otherwise they are hard to disinfect except by burning.

In the past much disinfection which should have been done at the bedside has been neglected in the belief that the germs would all be killed at one time by a terminal disinfection; but before time for terminal disinfection arrives the infection may have already spread to others.

2. Concerning terminal disinfection there is some difference of opinion among health authorities. All agree that when any unusual or rare infectious disease, which has not obtained a foothold in the community or country, threatens, every possible opportunity of destroying even a small amount of infection should be embraced. No one claims that any measures which may kill a single cholera vibrio should be omitted in the case of a threatened importation of cholera. The same holds true for *fumigation* to kill mosquitoes or rats when yellow fever or plague threatens.

With reference to terminal disinfection after the more common infectious diseases, such as diphtheria, scarlet fever, and tuberculosis, some authorities have taken the stand that terminal disinfection is unnecessary. Their claim is based upon the belief that the conditions which surround organisms that have been discharged from the patient's body are unfavorable for their multiplication, and that the decrease of the organisms, brought about by the processes of nature, is sufficient to reduce the number of remaining living organisms to a negligible quantity.

Since 1905 terminal disinfection after diphtheria and scarlet fever has been abandoned in Providence, R. I., and the records show that the reported prevalence of this disease has been no greater than in cities which have done terminal disinfection. In 1912 the New York City health department abandoned terminal disinfection after diphtheria, except that bedding and like goods were removed to steam disinfecting plants. This rule, however, did not apply to cases which ended fatally, or were terminated by removal to hospital or other quarters; in these cases terminal disinfection was done. At a later date the removal of bedding, etc., was discontinued. Likewise, terminal disinfection after measles, German measles, and whooping cough, was abandoned; also after poliomyelitis and cerebrospinal meningitis, except after fatal or removed cases.

The results obtained in these cities have raised the question, in the minds of health officials, whether or not disinfection, as ordinarily

practiced, is efficient. It would appear that possibly the disinfection, when done, did not disinfect, or that the forces of nature accomplished disinfection during the time necessary for the patient to recover. Possibly, and in some cases very probably, both of these conditions were present. The organisms may have been killed by the effects of drying or light, and the disinfection may have been done in a routine manner by some well-meaning employee of the health department, who had not the technical knowledge necessary to appreciate the ever-varying conditions under which disinfection must be done, and who had learned to use a certain amount of disinfectant for a given space and carried out this procedure faithfully, firmly believing that he was doing efficient work, never considering the factors of temperature, humidity, outside winds, porosity of walls, or rate of application of the disinfectant.

There is one factor that may have a bearing on the apparently favorable results obtained since abandoning terminal disinfection after certain diseases in Providence and New York; that is, the mechanical cleansing of the room. Chapin,¹ states that he "hoped the abandonment of official disinfection would cause people to do more cleansing for themselves, but there has thus far been little improvement." The handbook of the Bureau of Infectious Diseases of the New York City Department of Health states that "in diphtheria and measles, when patient recovers the sick room is thoroughly cleaned and aired."

The author believes that cleansing is an efficient method of disinfection, when properly carried out. All are familiar with the part played by sedimentation in the purification of streams. The same factor is present in the case of the air of a sick room. The law of gravity is always in effect; when the air is quiet, there is a constant tendency for dust or droplets to settle. As a result, the ceiling of the room will receive little, if any, infection. Any ledge or molding near the ceiling may receive some, but the amount found at different levels should steadily increase as the floor is approached, where the greatest amount will be found.

Thus it is seen that the place where disinfection is needed is that portion of the room which is easily reached with cleansing agents. The floors and woodwork are scrubbed, with particular attention to the ledges above door and window casements. In the present day a vacuum cleaner may be applied to the walls and ceiling generally. It is believed the results after a thorough mechanical cleansing will compare favorably with those after gaseous disinfection.

Another factor, of interest in diphtheria, is the possible absence of susceptible material. As a rule, all susceptible persons in the house

¹ Chapin, Charles V. *The Sources and Modes of Infection*, 1912.

or apartment are exposed before the first case is isolated and the isolation room is used for all cases before any terminal disinfection is attempted. Now that we have, in the Schick test, a reliable test for susceptibility to diphtheria, it will be interesting to note how many susceptible people escape infection if they occupy quarters vacated by a case of diphtheria after which no disinfecting procedure has been applied, provided, of course, they do not receive antitoxin. The important factor, in determining after what diseases terminal disinfection is to be done, is the length of time the organism of the disease in question can resist the action of natural agents, of which drying and light are the most important.

If standard works on bacteriology are examined as to the statements on the length of time an organism, say the diphtheria or tubercle bacillus, can exist under room conditions, one will likely find that no three agree. The statements of the same authorities concerning the time during which these organisms will resist a certain degree of heat will be found to agree much more closely. The explanation is simple: A fixed degree of heat for a certain length of time places all tests on a uniform basis and the results show accordingly. But when a drying test is recorded it is simply stated as drying "in diffused light," "in direct sunlight," "on paper," or "on fabric." No mention is made of the atmospheric temperature or humidity, the amount of light present, or the rate of drying.

That drying *per se* is not always fatal to an organism, is shown by the experiments of Vansteenberghe,¹ who rapidly dried the virus of rabies *in vacuo* and obtained a perfectly dry product which was virulent. A similar process has been used by Harris,² of St. Louis, except that he keeps the temperature low. Slow drying of the virus renders it noninfectious at the end of 9 to 14 days. If, therefore, one organism can be dried under certain conditions without being killed, is it not possible that others may act in the same way?

Though the apparently good results obtained since the abandonment of terminal disinfection after certain diseases are properly an incentive to search for more knowledge on this subject, it is believed the available data do not warrant the assumption that terminal disinfection is useless. I think that a majority of the health authorities of the country are not ready to discard such measures until more certain data have been obtained.

Dreyfus,³ in advocating a standard procedure for terminal disinfection, says: "There is no doubt that the lack of uniform methods of application under fixed conditions is responsible, in a very great

¹ Vansteenberghe. *Compte. Rend. Soc. Biologie*, 1903, vol. 55, p. 1646.

² Harris, D. L. *Jour. of Inf. Dis.*, vol. 10, p. 369.

³ Dreyfus, W., *Jour. of Am. Pub. Health Assoc.*, Nov., 1914, Vol. IV, p. 1048.

measure, for the discredit into which disinfection has fallen with a large percentage of professional men."

Rosenau¹ says: "If terminal disinfection prevents the occurrence of only a small number of cases, it would still seem to be worth while. So long as we possess such a reasonably efficient and satisfactory substance as formaldehyde, terminal disinfection should be practiced after all diseases in which the environment may become infected, even though the danger be slight."

Until the time required for natural disinfection to be accomplished has been determined, under conditions comparable with those under which the infection may exist in the sick room, the author believes it is safer to continue the use of cleansing and disinfecting procedures. The formulation of a standard procedure, to be used under standard conditions, will be a step in the right direction.

If then, as a rule, terminal disinfection is to be practiced, there next comes the question, How shall it be carried out? As already stated, good, thorough, mechanical cleansing is believed to be effective. If the walls are carefully brushed with the suction brush of a vacuum cleaner and the floors and woodwork thoroughly scrubbed with hot water and soap or, if preferred, with a disinfectant solution, a reasonable degree of disinfection will have been accomplished. This process can be applied in any sick room, in any dwelling, while the gaseous disinfectants, particularly in some of the buildings in the warmer climates, have their value reduced because of the difficulty of making the buildings reasonably tight. In rural districts only hand-operated vacuum cleaners are practicable, and in all cases the dust thus collected should be burned.

In connection with cleaning, renovation needs to be mentioned. After cleaning, a fresh coat of paint or varnish on the woodwork and floor, a renewal of the wall paper or, if the walls are bare, a fresh coat of whitewash or calcimine add their quota to the safety of the apartment.

In combating disease which is carried by animal hosts, fumigation with sulphur dioxide is the method of choice. The best results are obtained by fumigating all rooms of the structure simultaneously. Five pounds of sulphur per 1,000 cubic feet are sufficient, and should be placed in a thin layer so as to burn rapidly. If fumigating only to destroy vermin, moisture is not necessary. Exposure of 4 to 12 hours is desirable. Hydrocyanic-acid gas may be used for this purpose, but it is much more dangerous to man. Unless the process is in charge of a person with technical training and there is complete control of the structure being disinfected, its use should not be allowed.

¹ Rosenau, M. J., Preventive Medicine and Hygiene, 1913.

The person who is to apply the disinfectant is a most important consideration. Rosenau¹ states: "It requires time, money, and expenditure of well-directed and intelligent energy to accomplish satisfactory disinfection." While ability to carry out orders is a desirable qualification for a disinfecter, a certain amount of intelligence is essential.

Coming now to the disinfection process as applied in terminal disinfection against the great class of noninsect-borne communicable diseases, the chief question is, What is the best disinfectant? (The ideal disinfectant is unknown, and possibly never will be known.)

For many years formaldehyde gas has been rated as the foremost gaseous disinfectant, and it still holds its place. Its germicidal effect, when applied under proper conditions, is not denied. While not as rapid as steam or hot water, it does disinfect within a short time. Disinfection by formaldehyde does not, however, mean merely the making of a disagreeable odor. It must be used in a temperature of 65° F., or higher, and with a relative humidity of 65 per cent at the beginning of the process. It is useless to put formaldehyde gas in a room where the temperature is so low that polymerization can take place.

In practical work a sling psychrometer is sufficient apparatus to determine suitable conditions. If the temperature and humidity given above are not present they should be obtained, or some other disinfecting process should be employed. Humidity is easily raised by boiling water in the room, and this will also raise the temperature to the desired degree in most cases. Other factors to be considered are the prevailing wind, porosity of walls, and ability to keep the gas confined to the apartment to be disinfected.

Now as to the best method of liberating formaldehyde gas: There have been many devices invented for the production of formaldehyde or its liberation from solution. The tendency has been to simplify the procedure and increase the rate of liberation of gas. By liberating the gas rapidly a better effect is obtained, as the leakage is proportionately less.

A comparative study of the methods of evolving formaldehyde gas was made by McClintic,² who found that the greatest amount of formaldehyde was obtained from the retort or autoclave apparatus, but that the formalin-permanganate method gave nearly as large a yield with much more rapid evolution and, as a whole, better results. The method also raises the humidity of the room as the reaction proceeds.

¹ Rosenau, M. J. *Preventive Medicine and Hygiene*, 1913.

² McClintic, T. B. *Bull. No. 27, Hyg. Lab. U. S. Public Health Service*, 1903.

Briefly the procedure is as follows: Ten ounces of formalin and 5 ounces of potassium permanganate are sufficient for 1,000 cubic feet of space. A large receptacle should be used, to avoid spattering, and this should be placed upon a noncombustible surface. If there be not sufficient moisture present there will be some danger of the dry gas igniting. Several receptacles in different parts of the room are more effective than one large container. The permanganate is placed in the container and the formalin poured over it. The reaction is shown by ebullition of the fluid, slight or marked according to its temperature. When once started it continues until all available formaldehyde has been liberated.

In New York City, this method is modified by using 75 grams of permanganate in 90 cc. of water, hot if possible; then 30 grams of paraformaldehyde are added. This is sufficient for 1,000 cubic feet. This method makes less weight to carry, as the water is obtained at the place where disinfection is to be done. The paraformaldehyde is more stable than formaldehyde solution, the latter seldom containing the required 40 per cent.

At present the price of permanganate makes the cost of this method rather high. Whether we shall find a substitute as efficient as permanganate has not yet been fully determined. The formalin-aluminum-sulphate-lime method does not give as much gas as the permanganate method.

Dixon¹ reports favorable results by substituting sodium dichromate and sulphuric acid for potassium permanganate. The acid and formaldehyde solution are mixed and allowed to cool. This solution is then poured over the crystals of sodium dichromate, spread in a thin layer in a large container. The proportions are:

Sodium dichromate.....	oz..	10
Saturated solution formaldehyde gas.....	pint..	1
Sulphuric acid, commercial.....	oz..	1.5

Controls.

A suitable control test should be employed to determine the efficiency of the disinfection. A simple and efficient test is made by the Wilson method: A small folder of pasteboard in which there is pasted a strip of filter paper is prepared and sterilized. The filter paper is touched with a drop of broth culture of *B. prodigiosus*, or other harmless organism, and, after drying, is exposed in the room to be disinfected, not too close to the source of the gas. When the room is opened, the filter paper is removed from the folder with sterile forceps and planted in broth, and then incubated for 24 hours. If a chromogenic organism, such as *prodigiosus*, is used, the color tells whether the growth is due to unkilld test organisms or to accidental

¹ Dixon, Samuel G. Jour. A. M. A., Sept. 19, 1914, Vol. LXIII, p. 1025.

contamination. The use of such control tests is a check on efficiency, and the disinfecter learns to be more thorough and constantly strives to improve his results.

There is one method being put forward at present by the manufacturers of the high coefficient disinfectants, viz, the general spraying of all surfaces of a room with a solution or emulsion of some particular disinfectant. Most of these preparations are of an oily nature and many have a disagreeable odor. If the walls of a papered room are sprayed with them, the oily stains left necessitate renewal of the wall paper; if the room be calcimined, the wall must be recalcimined. If the odor that remains is disagreeable an attempt may be made to mask it with something more agreeable.

No attempt has been made to dwell to any extent on the use of the physical agents as disinfectants. There is little to discuss concerning heat, the best physical disinfectant. All are agreed that, when it can be applied, it is most rapid and efficient. The regret is that it can not be used under all circumstances.

At present the market price of disinfectants is decidedly fluctuating. The European war has caused a general advance in prices, in part because of the scarcity of certain products that have heretofore been imported, and in part by the lessening of competition among producers. It is, therefore, useless to expect to accomplish disinfection by chemical substances as economically as was possible one year ago. The cost of heat, however, has not advanced and consequently, from an economic viewpoint, heat should be employed on a wider scale.

Summary.

Briefly summarized, the points to be emphasized are:

1. Disinfecting procedures, properly applied, have an important part in the prevention of communicable diseases.
2. Their efficiency decreases as the distance between the place of origin of the infection (the patient) and the point of their application is increased.
3. Natural disinfection, or the destruction of infection by processes of nature, increases in efficiency in direct proportion to the length of time and the degree to which the processes (drying, sunlight, etc.), are allowed to act.
4. The point at which natural disinfection becomes sufficiently nearly complete to warrant the discontinuance of terminal disinfection should be determined under more exact conditions than have obtained in the past.
5. The choice of disinfectants must be made with due consideration of conditions, always bearing in mind that a good mechanical cleansing is one of the efficient means of disinfection. For gaseous disinfection, formaldehyde, evolved by the formalin-permanganate method

under proper conditions of temperature and moisture, is the simplest and most efficient method.

6. Control tests should be used to check the efficiency of the disinfection.

7. Though the results obtained in some cities since abandoning terminal disinfection after certain diseases seem to show that heretofore much useless disinfection has been done, it is not felt that the evidence thus far adduced, fully justifies its discontinuance.

INTESTINAL INFECTIONS.

THE SCHOOL GRADES ATTAINED BY 2,166 WHITE SCHOOL CHILDREN (1,062 BOYS, 1,104 GIRLS) IN THE CITY OF X, CLASSIFIED BY AGE, SANITATION, AND INTESTINAL PARASITES.

By C. W. STILES, Professor of Zoology, United States Public Health Service.

In a former article¹ it was shown that the school children in the City of X—who live at homes provided with sewer connection (group S), but without privies, average a lower percentage of infection with intestinal parasites and a lower percentage of unconscious coprophagia than do the children in the same city who live at homes provided with privies (group P).

In the present article, the same white children are classified by age, school grades, and sanitation (in respect to sewer, group S, or privy, group P), to see whether there is any more rapid advancement in school grades by either group—S. children or P. children.

The legal age for entering the first grade at school is 6 years, chronological age, and there are 12 grades in all (including the 4 high school years); each grade is theoretically of 1 year duration in the child's career. Accordingly, a child of 6 years flat to (but not inclusive) 7 years flat (namely, during his seventh year of life) is in his first theoretical school year, and a pupil of 17 years flat to (but not inclusive) 18 years flat is in his twelfth theoretical year of school age. The legal grade that a child is permitted theoretically to enter at a given chronological age thus represents his theoretical school year. Taking these data as basis, it is an easy matter to estimate the percentage of the theoretical legal school advancement a given group of children has made. For instance, if 10 children of 6 years of age (namely, in their seventh year) are in the first grade, they have advanced 100 per cent of the theoretical legal standard; but if 10 children of 7 years of age (in their eighth year) are in the first grade, they have advanced only 50 per cent of the theoretical legal standard, for they represent a theoretical total of 20 grades, but an actual total of only 10 grades.

¹ Public Health Reports, 1915, v. 30 (27), July 2, 1915, pp. 1991-2002.

TABLE 1.—Table of school grades attained by 1,062 white boys in the city of X—, classified by age and by sanitary groups.

[S—from sewered homes, P—from homes with privy, U—from homes of unknown sanitation, T—total of S, P, and U. Theoretical legal grades are shown by heavy lines.]

Age of pupils.	Total number of pupils in each grade.												Total number of pupils.	School age total.	School grades.		S. A.: S. G. as 100 = x.
	1	2	3	4	5	6	7	8	9	10	11	12			Total.	Average.	
6 S.....	43	5	1										49	49	56	1.14	114.28
6 P.....	13	4											17	17	21	1.23	123.52
6 U.....	3												3	3	3	1.00	100.00
T.....	59	9	1										69	69	80	1.16	115.94
7 S.....	42	32	6	2									82	164	132	1.61	80.50
7 P.....	13	6											19	38	25	1.32	65.80
7 U.....	7												7	14	7	1.00	50.00
T.....	62	38	6	2									108	216	164	1.52	75.90
8 S.....	9	42	38	8									97	291	239	2.46	82.13
8 P.....	9	13	3	2									27	81	52	1.92	64.19
8 U.....	3	2											5	15	7	1.40	46.67
T.....	21	57	41	10									129	387	298	2.31	77.00
9 S.....	5	18	39	25	7	1							95	380	299	3.14	78.68
9 P.....	4	12	11	3	1								31	124	78	2.51	62.90
9 U.....	3	2		2	1								8	32	20	2.50	62.50
T.....	12	32	50	30	9	1							134	536	397	2.96	74.06
10 S.....	5	1	21	30	25	6	1						89	445	358	4.02	80.44
10 P.....	1	1	9	7	2								20	100	68	3.40	68.00
10 U.....	1	1	9	4	2								17	85	56	3.29	65.88
T.....	7	3	39	41	29	6	1						126	630	482	3.82	76.50
11 S.....	1	1	7	16	22	16	7	1					71	426	351	4.94	82.32
11 P.....	2	2	6	6	7	3							26	156	101	3.88	64.74
11 U.....		1	1	1	1	1							5	30	20	4.00	66.66
T.....	3	4	14	23	30	20	7	1					102	612	472	4.62	77.12
12 S.....		1	5	9	18	22	12	2	1				70	490	384	5.48	78.03
12 P.....		1	3	5		7	1	1					18	126	88	4.89	69.83
12 U.....			1	2	3	5			1				12	84	65	5.42	77.38
T.....		2	9	16	21	34	13	3	2				100	700	537	5.37	76.71
13 S.....	1	2	3	6	9	9	24	19	4				77	616	463	6.40	80.03
13 P.....			3	2	4	2	4						15	120	77	5.13	64.16
13 U.....					2	1	2	1					6	48	38	6.33	79.16
T.....	1	2	6	8	15	12	30	20	4				98	784	608	6.20	77.55
14 S.....			1	4	5	3	10	11	8	2	1		45	405	323	7.18	79.75
14 P.....				1	1			1	2				5	45	35	7.00	77.77
14 U.....		1		3	1	2	6	1			1		15	135	92	6.13	68.14
T.....		1	1	8	7	5	16	13	10	2	2		65	585	450	6.92	76.92
15 S.....		1		2	3		7	8	14	11		1	47	470	386	8.21	82.12
15 P.....					1	1	2	1	2	1			8	80	61	7.62	76.25
15 U.....						1	2	3	4				10	100	80	8.00	80.00
T.....		1		2	4	2	11	12	20	12		1	65	650	527	8.11	81.07
16 S.....			2		1	1	1	3	9	7	9	3	36	396	334	9.27	84.34
16 P.....	1				1			2	4				4	44	22	5.50	50.00
16 U.....						2	1	2	1				6	66	44	7.33	66.66
T.....	1		2		2	3	2	7	10	7	9	3	46	506	400	8.68	79.03
17 S.....				1				3		4	4	2	14	168	136	9.71	80.95
17 P.....									3		1		4	48	38	9.50	79.16
17 U.....											2		2	24	22	11.00	91.66
T.....				1				3	3	4	7	2	20	240	196	9.80	81.66
Total S.....	106	103	123	103	90	58	62	47	36	24	14	6	772	4,300	3,491	4.52	81.18
Total P.....	43	39	35	26	17	13	7	5	7	1	1		194	979	666	3.43	68.03
Total U.....	17	7	11	12	10	12	11	7	3		3		96	636	454	4.72	71.38
T.....	166	149	169	141	117	83	80	59	49	25	18	6	1,062	5,915	4,511	4.34	77.95

TABLE 2.—Table of school grades attained by 1,104 white girls in the city of X—, classified by age and by sanitary groups.

[S=from sewered homes, P=from homes with privy, U=from homes of unknown sanitation, T=total of S, P, and U. Theoretical legal grades are shown by heavy lines.]

Age of pupils.	Total number of pupils in each grade.												Total number of pupils.	School age, total.	School grades.		S. A.: S. G. as 100 = X.
	1	2	3	4	5	6	7	8	9	10	11	12			Total.	Average.	
6 S.....	28	8											36	36	44	1.22	122.22
6 P.....	12		1										13	13	15	1.15	115.38
6 U.....	1	1											2	2	2	1.00	100.00
T.....	41	9	1										51	51	61	1.19	119.60
7 S.....	25	30	5										60	120	100	1.66	83.33
7 P.....	15	6	2										23	46	33	1.43	71.73
7 U.....	5	2											7	14	9	1.28	64.28
T.....	45	38	7										90	180	142	1.57	78.88
8 S.....	4	32	30	5	1								72	216	183	2.54	84.72
8 P.....	9	7	7		1								24	72	49	2.04	68.05
8 U.....	1	1	1										3	9	6	2.00	66.66
T.....	14	40	38	5	2								99	297	238	2.40	80.13
9 S.....	3	21	12	24	2								62	248	187	3.01	75.40
9 P.....	5	9	16	4									34	136	87	2.55	63.97
9 U.....		2	2	2									6	24	18	3.00	75.00
T.....	8	32	30	30	2								102	408	292	2.86	71.56
10 S.....	4	3	23	28	32	1							91	455	357	3.92	78.46
10 P.....	1	4	5	11	8	1							30	150	114	3.80	76.00
10 U.....		2	1	1									4	20	11	2.75	55.00
T.....	5	9	29	40	40	2							125	625	482	3.85	77.12
11 S.....	2		7	16	25	22	3						75	420	365	4.87	86.90
11 P.....		1	4	6	7	4							22	132	97	4.40	73.48
11 U.....				1	1	2							4	24	21	5.25	87.50
T.....	2	1	11	23	33	28	3						101	576	483	4.78	83.85
12 S.....	1	1	3	7	15	19	25	5					76	532	441	5.84	83.45
12 P.....		2	2	5	4		5						22	154	109	4.95	70.77
12 U.....						2	1						3	21	19	6.33	90.47
T.....	1	3	5	12	19	25	31	5					101	707	572	5.66	80.90
13 S.....				3	8	15	28	31	1				86	688	595	6.91	86.48
13 P.....			1	8	3	5	6	1	1				25	200	139	5.36	69.50
13 U.....						3			1				4	32	27	6.75	84.37
T.....			1	11	11	23	34	32	3				115	920	761	6.62	82.71
14 S.....		2	2	5	7	16	30	12	4	1			79	711	592	7.49	83.26
14 P.....		1	3	3	6	2	2	1	1				19	171	115	6.05	67.25
14 U.....			1	1	1	1	2	3					9	81	65	7.22	80.24
T.....		3	6	9	14	19	34	16	5	1			107	963	772	7.21	80.16
15 S.....					2	5	7	9	31	24	3		81	810	713	8.80	88.02
15 P.....					2	1	2	3	5	2			15	150	119	7.93	79.33
15 U.....							1		1				2	20	16	8.00	80.00
T.....					4	6	10	12	37	26	3		98	980	848	8.65	86.63
16 S.....					1	1		3	13	25	15	5	63	693	627	9.95	90.47
16 P.....					1	1	2		2	1	2		9	99	73	8.11	73.74
16 U.....								1		3			4	44	38	9.50	86.36
T.....					2	2	2	6	13	29	17	5	76	836	738	9.71	88.27
17 S.....							1	6	10	10	6		33	396	344	10.42	86.86
17 P.....							2		1	1			4	48	33	8.25	68.75
17 U.....								1			1		2	24	21	10.50	87.50
T.....							2	1	8	11	10	7	39	468	398	10.20	85.04
Total S.....	67	95	82	85	91	70	79	79	63	63	29	11	814	5,325	4,551	5.59	83.58
Total P.....	42	29	39	37	29	22	19	8	8	5	2		240	1,371	983	4.10	71.70
Total U.....	7	8	4	5	2	8	3	3	6	3		1	50	315	253	5.06	80.31
Total T.....	116	132	125	127	122	100	101	90	77	71	31	12	1,104	7,011	5,787	5.24	80.14

White Boys.

Of 1,189 white boys who gave data of one kind or another, definite information exists as to the school grades of 1,062 pupils 6 to 17 years old, inclusive; of these 1,062 boys, 772 lived at homes (group S) provided with sewers (but without privies), 194 at homes provided with privies (group P), and 96 at homes in regard to which data as to this phase of sanitation are lacking (group U).

A study of the table printed on page 2061 shows that these 1,062 boys are entitled theoretically to 5,915 school grades, representing an average of 5.57 grades. Actually, however, these boys had attained 4,611 grades, representing an average of 4.34 grades. Thus the boys clearly averaged 1.23 grades theoretical retardation, and they made only 77.95 per cent of their theoretical legal standard.

The 772 boys of group S were entitled to 4,300 grades, an average of 5.57 grades. They attained 3,491 grades, an average of 4.52 grades. Thus they averaged a retardation of 1.05 grades and they made only 81.18 per cent of their theoretical legal standard.

The 194 boys of group P were entitled to 979 grades, an average of 5.05 grades. They attained 666 grades, an average of 3.43 grades. Thus they averaged a retardation of 1.62 grades and they made but 68.03 per cent of their theoretical legal standard.

These figures clearly demonstrate that the average boy of group S makes better progress in school than does the average boy of group P. In fact, the average boy of group S is about 13 per cent nearer standard than is the average boy of group P; or taking the boys of group S as standard, the average boy of group P is about 16 per cent behind the average boy of group S.

If the separate years, instead of the totals, are studied, the main conclusion based on the totals is seen to hold for every year except the first, when the boys of group P took the lead.

White Girls.

Of the 1,259 white girls who gave data of one kind or another, 1,104 (of 6 to 17 years old inclusive) gave definite information regarding their school grades; of these 1,104 girls, 814 lived at sewerred homes (group S), 240 at privy homes (group P), and 50 at homes in regard to which data as to this phase of sanitation are lacking (group U).

A study of the table printed on page 2062, shows that these 1,104 girls are entitled theoretically to 7,011 school grades, or an average of 6.35 grades. Actually, however, these girls had attained 5,787 grades, an average of 5.24 grades. Thus these girls averaged 1.11 years

retardation and they attained only 80.14 per cent of their theoretical legal standard.

The 814 girls of group S were entitled to 5,325 grades, an average of 6.54 grades. They attained 4,551 grades, an average of 5.59 grades. Thus, they averaged 0.95 grade retardation and attained but 83.58 per cent of their theoretical legal standard.

The 240 girls of group P were entitled to 1,371 grades, an average of 5.71 grades. They attained 983 grades, an average of 4.10 grades. Thus, they averaged a retardation of 1.61 grades and attained only 71.70 per cent of their theoretical legal standard.

The figures demonstrate that the average girl of group S makes better progress in school than does the average girl of group P. In fact, the average girl of group S is about 12 per cent nearer standard than is the average girl of group P; or, taking the girls of group S as standard, the average girl of group P is about 14 per cent behind the average girl of group S.

If the separate years, instead of the totals, are studied, the main conclusion based upon the total is seen to hold for every year.

Comparison of White Boys and White Girls.

Comparing the boys and the girls, it is clear that the girls advance more rapidly in school than do the boys of corresponding groups, despite the physiological handicap of girls at age of puberty.

Boys of group S, however, advance more rapidly than do either girls of group P or average girls.

Grades of Children Known to Be Infected With Intestinal Parasites.

Endamoeba coli.—Of the 68 pupils (46 boys, 22 girls) who showed infection with *Endamoeba coli*, 64 (45 boys, 19 girls) gave data regarding their school grades.

Taking the average grade attained in each age and sanitary group as a basis for estimate, these 64 pupils (45 boys, 19 girls) should have attained a total of 312.75 grades (boys 204.14, girls 108.61); actually they attained 340 grades (boys 225, girls 115). Thus these children averaged a gain of 0.43 grade.

Of these 64 pupils, 22 (15 boys, 7 girls) were below the average for their respective groups, and 42 (30 boys, 12 girls) were above the average for the respective groups.

If the various groups are compared, it is seen that they can be arranged as follows:

Six boys of group P, 0.04 grade average gain; 2 girls of group P, 0.08 grade average gain; total girls (19), 0.34 grade average gain; 17 girls of group S, 0.37 grade average gain; total pupils (64),

0.43 grade average gain; 35 boys of group S, 0.45 grade average gain; total boys (45), 0.46 grade average gain; 4 boys of group U, 1.24 grades average gain.

Thus, there is no evidence that this infection caused a retardation in school grades.

Lamblia.—Of 99 children (71 boys, 28 girls) who showed *Lamblia* infection, 91 gave definite data regarding their school grades.

Taking the average grade attained in each age and sanitary group as a basis for estimate, these 91 pupils (65 boys, 26 girls) should have attained a total of 368.03 grades (boys 256.75, girls 111.28); actually they attained 410 grades (boys 283, girls 127). Thus these children averaged a gain of 0.46 grade.

Of these 91 pupils (65 boys, 26 girls), 1 (a boy) was in his correct grade (based on the average of the group), 33 (26 boys, 7 girls) were below the average for their respective groups, and 58 (39 boys, 19 girls) were above the average for their respective groups.

If the various groups are compared, it is seen that they can be arranged as follows:

Eight boys of group P, 0.18 grade average gain; total boys (65), 0.40 grade average gain; 52 boys of group S, 0.40 grade average gain; 9 girls of group P, 0.45 grade average gain; total pupils (91), 0.46 grade average gain; total girls (26), 0.60 grade average gain; 16 girls of group S, 0.68 grade average gain; 1 girl of group U, 0.78 grade gain; 5 boys of group U, 0.81 grade average gain.

The conclusion seems justified that infection with *Lamblia* is not shown to have any influence in retarding school grade advancement (as compared with the average of the respective groups) among the pupils.

Trichomonas.—The number of infections (6) found is too small to warrant statistical comparison, but it may be remarked that 4 stood above the average, and 2 below the average of the respective groups.

Ascaris.—Of the 58 pupils (46 boys, 12 girls) infected with *Ascaris* 53 (41 boys, 12 girls) gave definite data regarding their school grades.

Taking the average grade attained in each age and sanitary group as basis for estimate, these 53 pupils (41 boys, 12 girls) should have attained a total of 213.45 grades (boys 166.38, girls 47.07); actually they attained 210 grades (boys 168, girls 42). Thus these children averaged an almost negligible loss of 0.07 grade (boys average gain of 0.04 grade, girls average loss of 0.42 grade).

Of these 53 pupils, 1 (a boy) was in his correct grade (based on the average of the group); 31 (24 boys, 7 girls) were below the average for their respective groups; and 21 (16 boys, 5 girls) were above the average for their respective groups.

If the various groups are compared they can be arranged as follows:

Seven girls of group S, 1.18 grades average retardation; total girls (12), 0.42 grade average retardation; 2 boys of group U, 0.15 grade average retardation; total pupils (53), 0.07 grade average retardation; 6 boys of group P, 0.03 grade average gain; total boys (41), 0.04 grade average gain; 33 boys of group S, 0.05 grade average gain; 5 girls of group P, 0.63 grade average gain.

Necator.—Of 83 children (55 boys, 28 girls) who showed hookworm infection, 78 (51 boys, 27 girls) gave data regarding their school grades.

Taking the average grade attained in each age and sanitary group as basis for estimate, these 78 pupils (51 boys, 27 girls) should have attained a total of 357.56 grades (boys 230.30, girls 127.26); actually they attained 340 grades (boys 219, girls 121). Thus these children averaged a deficit of 0.23 grade.

Of these 78 pupils, 1 (a girl) was in her correct grade (based on the average of the group), 42 (31 boys, 11 girls) were below the average for the respective groups, and 35 (20 boys, 15 girls) were above the average for the respective groups.

In connection with these figures it is well to recall that most of these cases of infection (that were found) were light, and that there is a tendency among city children to lighter infections among the girls than among the boys. The point is, however, clear that the hookworm children were retarded below the average of their respective groups.

If the various groups are compared, it is seen that they can be arranged as follows:

Three girls of group U, 1.83 grades average retardation; 2 boys of group U, 0.75 grade average retardation; 13 girls of group S, 0.25 grade average retardation; 34 boys of group S, 0.25 grade average retardation; total pupils (78), 0.23 grade average retardation; total girls (27), 0.23 grade average retardation; total boys (51), 0.22 grade average retardation; 15 boys of group P, 0.09 grade average retardation; 11 girls of group P, 0.23 grade average gain.

If the 3 girls of group U belong really in group P, this group would average a retardation of 0.21 grade.

Oxyuris.—The one boy infected with *Oxyuris* stood above the average for his group.

Hymenolepis nana.—The one boy infected with *Hymenolepis nana* stood below the average for his group.

Summary and Conclusions.

From the foregoing data it seems clear that the 1,104 girls studied attained 80 per cent and the 1,062 boys studied attained 78 per

cent of the school grades to which they are entitled on the basis of the legal provision that they may enter the first grade at 6 years of age and on the assumption that they are legally entitled to advance one grade per year. Thus, on the average, the girls made a slightly more rapid advancement than did the boys.

If the children are divided into sanitary groups, according to the presence of a sewer connection or a privy at their homes, it is clear that the children at sewered homes (without a privy) (group S) (girls 84 per cent, boys 81 per cent) advance more rapidly than do the children (girls 72 per cent, boys 68 per cent) who live at homes provided with a privy (group P); boys from sewered homes (group S) (namely, 81 per cent) advance more rapidly than do average girls (80 per cent) and than girls from homes provided with a privy (group P) (namely, 72 per cent).

Thus the home sanitation is an index to two distinct groups of school children.

Many different factors come into consideration in explaining this fact. It would doubtless be unwarranted to assume that the privy, with its attendant dangers, is the only factor that causes this retardation, for many sociological factors certainly play their rôles. It is, however, legitimate to invite attention to the fact that more cases of soil-pollution diseases are to be expected at privy homes (group P) than at sewered homes (group S), and therefore that more absence from school, with consequent retardation, because of these diseases, is to be expected among children from privy homes (group P) than among those from sewered homes (group S); the conclusion therefore seems justified that the privy, with its attendant dangers of disease, is one of the many factors involved in explaining the data submitted.

If we study the cases of different intestinal parasitic infections that are spread through lack of proper disposal of human excreta, the conclusions seem justified that the cases of infection with *Endamoeba coli* and with *Lambdia* do not present any evidence that these two parasites have had any effect in the retardations noted; the statistics for infections with *Ascaris lumbricoides* and with *Necator americanus*, however, tend to support the view that these two parasites are factors that must be considered as of practical importance (less for *Ascaris* than for *Necator*) in connection with retardation, even in cases of relatively light infection, as were most of the cases with which we had to deal; our data for infection with *Trichomonas*, *Oxyuris*, *Trichuris*, and *Hymenolepis nana* are not sufficient to warrant any deduction as respects these parasites.

PLAGUE-PREVENTION WORK.

CALIFORNIA.

The following report of plague-prevention work in California for the week ended June 19, 1915, was received from Passed Asst. Surg. Hurley, of the United States Public Health Service, in temporary charge of the work:

San Francisco, Cal.

RAT PROOFING.		RAT PROOFING—continued.	
New buildings:		Old buildings—Continued.	
Inspections of work under construction.	172	Concrete floors installed, 23,776 square feet.	45
Basements concreted, 16,730 square feet.	51	Basements concreted, 11,743 square feet.	20
Floors concreted, 9,400 square feet.	52	Yards and passageways, etc., concreted, 27,007 square feet.	101
Yards, passageways, etc., 13,992 square feet.	55	Total area concrete laid, square feet.	62,526
Total area of concrete laid, square feet.	40,122	Floors rat proofed with wire cloth, 5,700 square feet.	3
Classes A, B, and C (fire proof) buildings:		Buildings razed.	36
Inspections made.	178	New garbage cans stamped approved.	863
Roof and basement ventilators, etc., screened.	6,060	Nuisances abated.	404
Wire screening used, square feet.	29,690		
Openings around pipes, etc., closed with cement.	10,004		
Sidewalk lens lights replaced.	1,180		
Old buildings:			
Inspections made.	652		
Wooden floors removed.	42		
Yards and passageways, planking removed.	14		
Cubic feet new foundation walls installed.	7,314		

Amount of cargo inspected and description of same.	Condition.	Rat evidence.
Steamer Queen from Seattle:		
50 bales rags.	O. K.	None.
80 cases milk and household goods.	O. K.	None.
650 sacks of flour, wheat, and peanuts.	O. K.	None.

Rats trapped on wharves and water front.	30	RATS COLLECTED AND EXAMINED FOR PLAGUE.	
Rats trapped on vessels.	17	Collected.	285
Traps set on wharves and water front.	159	Examined.	218
Traps set on vessels.	53	Found infected.	0
Vessels trapped on.	11		
Poisons placed on water front (pieces).	3,600		
Poisons placed within Panama-Pacific International Exposition grounds (pieces).	7,200		
Bait used on water front and vessels, bacon (pounds).	6		
Amount of bread used in poisoning water front (loaves).	12		
Pounds of poison used on water front.	6		
		RATS IDENTIFIED.	
		Mus norvegicus.	137
		Mus rattus.	66
		Mus alexandrinus.	53
		Mus musculus.	29

Record of plague infection.

Places in California.	Date of last case of human plague.	Date of last case of rat plague.	Date of last case of squirrel plague.	Total number rodents found infected since May, 1907.
Cities:				
San Francisco.....	Jan. 30, 1908	Oct. 23, 1908	(¹)	398 rats.
Oakland.....	Aug. 9, 1911	Dec. 1, 1908	(¹)	126 rats.
Berkeley.....	Aug. 28, 1907	(¹)	(¹)	None.
Los Angeles.....	Aug. 11, 1908	(¹)	Aug. 21, 1908	1 squirrel.
Counties:				
Alameda (exclusive of Oakland and Berkeley).	Sept. 24, 1909	Oct. 17, 1909 ²	Aug. 7, 1914	286 squirrels, 1 wood rat.
Contra Costa.....	May 17, 1914	(¹)	Mar. 4, 1915	1,567 squirrels.
Fresno.....	(¹)	(¹)	Oct. 27, 1911	1 squirrel.
Merced.....	(¹)	(¹)	July 12, 1911	5 squirrels.
Monterey.....	(¹)	(¹)	Apr. 10, 1914	6 squirrels.
San Benito.....	June 4, 1913	(¹)	Apr. 13, 1915	37 squirrels.
San Joaquin.....	Sept. 18, 1911	(¹)	Aug. 26, 1911	18 squirrels.
San Luis Obispo.....	(¹)	(¹)	Jan. 29, 1910	1 squirrel.
Santa Clara.....	Aug. 31, 1910	(¹)	July 23, 1913	25 squirrels.
Santa Cruz.....	(¹)	(¹)	May 17, 1910	3 squirrels.
Stanislaus.....	(¹)	(¹)	June 2, 1911	13 squirrels.

¹ None.² Wood rat.*Squirrels collected and examined for plague.*

Contra Costa County.....	763
Alameda County.....	409
San Benito County.....	340
San Joaquin County.....	106
Monterey County.....	115
Merced County.....	88
Santa Clara County.....	51
Stanislaus County.....	57
Total.....	1,909
Found infected.....	0

Ranches inspected and hunted over.

Contra Costa County.....	51
Alameda County.....	46
San Benito County.....	22
San Joaquin County.....	17
Merced County.....	18
Monterey County.....	14
Santa Clara County.....	5
Stanislaus County.....	3
Total.....	176

The work is being carried on in the following-named counties: Alameda, Contra Costa, San Francisco, Merced, San Joaquin, Santa Cruz, Stanislaus, San Benito, Monterey, Santa Clara, and San Mateo.

LOUISIANA—NEW ORLEANS—PLAGUE ERADICATION.

The following report of plague-eradication work at New Orleans for the week ended June 26, 1915, was received from Surg. Creel, of the United States Public Health Service, in temporary charge of the work:

OUTGOING QUARANTINE.		BUILDINGS RAT PROOFED—continued.	
Vessels fumigated with sulphur.....	10	By concrete floor and wall.....	301
Vessels fumigated with carbon monoxide....	10	By minor repairs.....	532
Vessels fumigated with hydrocyanic gas....	1	Square yards of concrete laid.....	29,687
Pounds of sulphur used.....	4,115	Total buildings rat proofed.....	1,157
Pounds of coke consumed in carbon monoxide fumigation.....	16,700	Total buildings rat proofed to date.....	42,846
Pounds of potassium cyanide used in hydrocyanic-gas fumigation.....	102	Abatements.....	52
Pounds of sodium carbonate used in hydrocyanic-gas fumigation.....	120	Abatements to date.....	25,429
Pounds of sulphuric acid used in hydrocyanic-gas fumigation.....	104		
Clean bills of health issued.....	27	LABORATORY OPERATIONS.	
Foul bills of health issued.....	6	Rodents received by species:	
FIELD OPERATIONS.		Mus norvegicus.....	1,567
Rats trapped.....	5,134	Mus rattus.....	91
Premises disinfected.....	4	Mus alexandrinus.....	92
Premises inspected.....	19,673	Mus musculus.....	3,159
Notices served.....	43	Wood rats.....	75
BUILDINGS RAT PROOFED.		Muskrats.....	39
By elevation.....	195	Putrid (included in enumeration of species).....	110
By marginal concrete wall.....	129	Total rodents received at laboratory.....	5,023
		Rodents examined.....	2,102
		Number of suspicious rats.....	6
		Plague rats confirmed.....	1

Rodent case.

Case No.	Address.	Captured.	Diagnosis confirmed.	Treatment of premises.
244	1900 Constance Street.....	June 15, 1915.	June 22, 1915.	Sprayed with pulicide solution; rat proofing immediately initiated; intensive trapping.

Last case of human plague, October 4, 1914.

Last case of rodent plague, June 22, 1915.

Total number of rodents captured to June

26..... 376,774

Total number of rodents examined to June

26..... 263,614

Total cases of rodent plague to June 26, by species:

Mus musculus.....	4
Mus rattus.....	16
Mus norvegicus.....	216
Mus alexandrinus.....	8

Total rodent cases to June 26, 1915... 244

HAWAII—PLAGUE PREVENTION.

The following reports of plague-prevention work in Hawaii were received from Surg. Trotter, of the United States Public Health Service.

Honolulu.

WEEK ENDED JUNE 12, 1915.

Total rats and mongoose taken.....	455	Average number of traps set daily.....	1,085
Rats trapped.....	442	Cost per rat destroyed.....cents..	19
Mongoose trapped.....	13	Last case rat plague, Aiea, 9 miles from Honolulu,	
Examined microscopically.....	367	Apr. 12, 1910.	
Showing plague infection.....	0	Last case human plague, Honolulu, July 12, 1910.	
Classification of rats trapped:		Last case rat plague, Kalopa stable, Paauhau,	
Mus alexandrinus.....	201	Hawaii, Aug. 29, 1914.	
Mus musculus.....	175	Last case human plague, Paauhau Landing, Hawaii,	
Mus norvegicus.....	51	Aug. 17, 1914.	
Mus rattus.....	15		

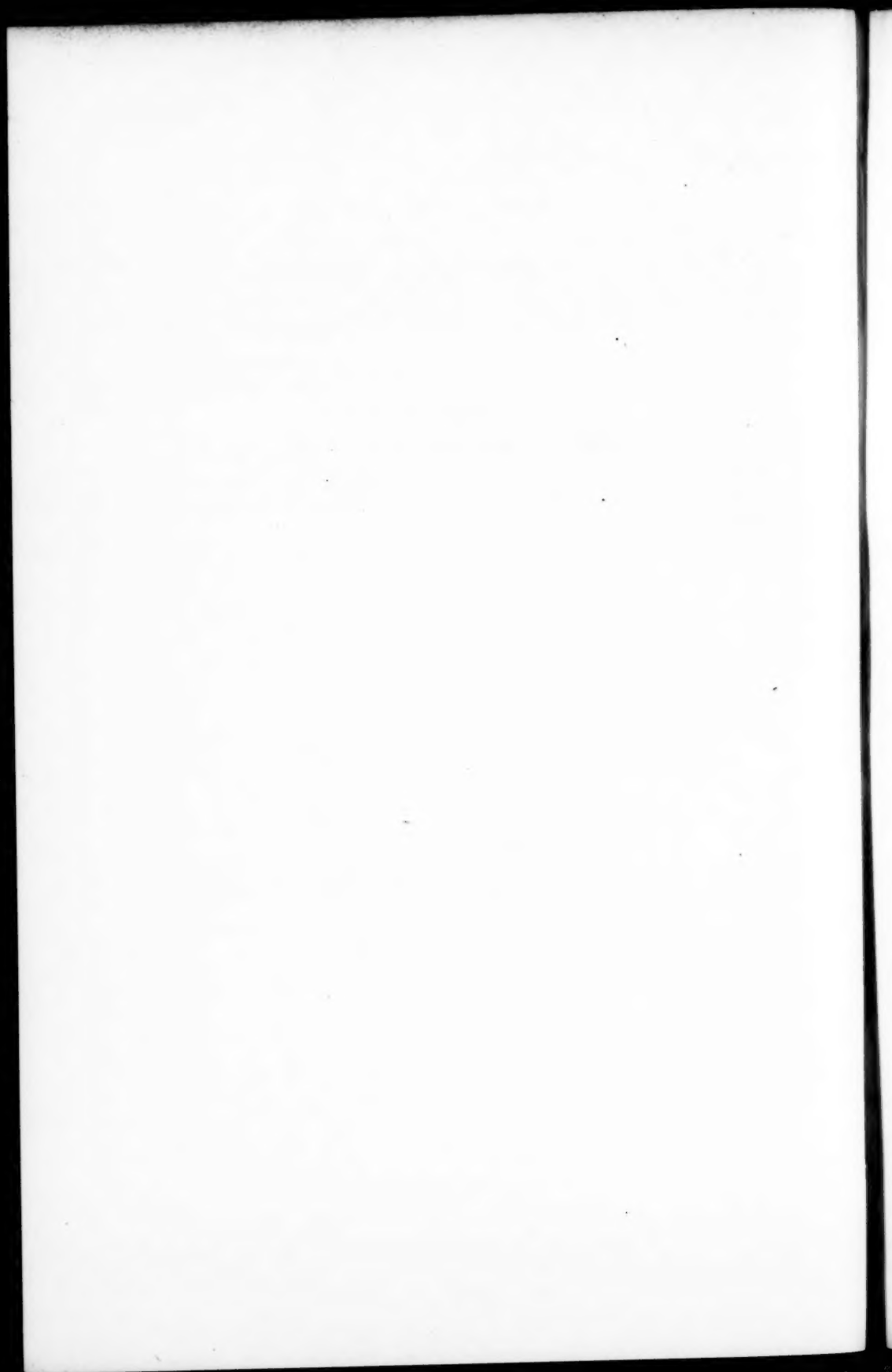
Hilo.

WEEK ENDED JUNE 5, 1915.

Rats and mongoose taken.....	2,702	Classification of rats trapped and found dead:	
Rats trapped.....	2,667	<i>Mus norvegicus</i>	510
Rats found dead.....	1	<i>Mus alexandrinus</i>	381
Mongoose taken.....	34	<i>Mus rattus</i>	753
Rats and mongoose examined macroscopically	2,702	<i>Mus musculus</i>	1,024
Rats and mongoose plague infected.....	0	Last case of rat plague, Paauhau Sugar Co., Aug.	
		29, 1914.	
		Last case of human plague, Paauhau Sugar Co.,	
		Aug. 10, 1914.	

PORTO RICO—PLAGUE PREVENTION.

During the period from June 5 to 18, 1915, 665 rodents (rats and mice) were examined in Porto Rico. No plague infection was found. The rodents were collected at San Juan, Puerta de Tierra, and Santurce.



PREVALENCE OF DISEASE.

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring.

IN CERTAIN STATES AND CITIES.

CEREBROSPINAL MENINGITIS.

City Reports for Week Ended June 19, 1915.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Boston, Mass.....	2	2	Galveston, Tex.....	1	1
Bridgeport, Conn.....	1	1	Milwaukee, Wis.....	1	1
Buffalo, N. Y.....		1	Niagara Falls, N. Y.....		1
Canton, Ohio.....	1		Philadelphia, Pa.....	1	
Chicago, Ill.....	4		St. Louis, Mo.....		1
Cleveland, Ohio.....	2		Springfield, Ill.....		1
Dayton, Ohio.....		1			

DIPHTHERIA.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 2077.

ERYSIPELAS.

City Reports for Week Ended June 19, 1915.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Ann Arbor, Mich.....	2		Los Angeles, Cal.....	1	
Binghamton, N. Y.....	1	1	Milwaukee, Wis.....	1	
Boston, Mass.....	2		New Castle, Pa.....	1	
Bridgeport, Conn.....	1		Philadelphia, Pa.....	12	3
Chelsea, Mass.....		1	Pittsburgh, Pa.....	8	
Chicago, Ill.....	17	2	Providence, R. I.....		1
Cincinnati, Ohio.....	1		Rochester, N. Y.....	1	1
Cleveland, Ohio.....	6	1	St. Louis, Mo.....	2	
Detroit, Mich.....	1		San Francisco, Cal.....	1	
Harrisburg, Pa.....	2		Steelton, Pa.....	1	
Hartford, Conn.....	1		Williamsport, Pa.....	1	

LEPROSY.

Hawaii Report for May, 1915.

During the month of May, 1915, cases of leprosy were notified in Hawaii as follows: North Kohala District, Hawaii, 1; Makawao District, Maui, 2; Honolulu, Oahu, 6.

MALARIA.**Arkansas Report for May, 1915.**

During the month of May, 1915, 183 cases of malaria were notified in Arkansas.

City Reports for Week Ended June 19, 1915.

During the week ended June 19, 1915, malaria was reported by cities as follows: Boston, Mass., 1 case; Charleston, S. C., 1 death; Mobile, Ala., 2 deaths.

MEASLES.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 2077.

PELLAGRA.**Arkansas Report for May, 1915.**

During the month of May, 1915, 199 cases of pellagra were notified in Arkansas.

City Reports for Week Ended June 19, 1915.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Charleston, S. C.		7	New Orleans, La.	2	2
Los Angeles, Cal.	1		Richmond, Va.		1
Mobile, Ala.		2	Worcester, Mass.	1	
Nashville, Tenn.	3	3			

PLAGUE.**California—Plague-Infected Squirrels Found.**

Passed Asst. Surg. Hurley reported that during the period from June 19 to 21, 1915, six plague-infected ground squirrels were found in California as follows: In Contra Costa County, two on the Antone Silva ranch, 8 miles southeast of San Pablo, June 19; one on the Baralda ranch, near Lafayette, June 21; and in San Benito County, one on the J. D. Watson ranch, near Bird Creek; one on the Mary Sally estate, near Bird Creek, June 19; and one on the M. Sally ranch, near Hollister, June 21.

PNEUMONIA.**City Reports for Week Ended June 19, 1915.**

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Chicago, Ill.	87	39	Norfolk, Va.	1	1
Cleveland, Ohio.	25	12	Philadelphia, Pa.	25	20
Dayton, Ohio.	1	1	Pittsburgh, Pa.	19	9
Detroit, Mich.	1	6	Reading, Pa.	1	1
Galesburg, Ill.	1	1	Rochester, N. Y.	7	3
Kalamazoo, Mich.	1	1	San Francisco, Cal.	10	8
Lancaster, Pa.	1		Schenectady, N. Y.	1	
Los Angeles, Cal.	8	5	Steelton, Pa.	1	
Manchester, N. H.	1	1	York, Pa.	1	

POLIOMYELITIS (INFANTILE PARALYSIS).**Arkansas Report for May, 1915.**

During the month of May, 1915, 1 case of poliomyelitis was notified in Sebastian County, Ark.

City Reports for Week Ended June 19, 1915.

During the week ended June 19, 1915, poliomyelitis was reported by cities as follows: Boston, Mass., 1 case; Chicago, Ill., 2 cases.

ROCKY MOUNTAIN SPOTTED FEVER.**Idaho.**

Asst. Surg. Paine reported June 30, 1915, that during the period from March 1 to June 1, 1915, 206 cases of Rocky Mountain spotted fever, with 8 deaths, were notified in an area covering 14 counties in the southern part of the State of Idaho.

Washington—Douglas County.

The commissioner of health of Washington reported by telegraph July 6, 1915, that a case of Rocky Mountain spotted fever had been notified at Spencer, Douglas County, Wash.

SCARLET FEVER.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 2077.

SMALLPOX.**Kansas.**

Collaborating Epidemiologist Crumbine reported by telegraph that during the week ended July 3, 1915, new cases of smallpox were notified in counties of Kansas as follows: Allen, 1; Bourbon, 1; Cherokee, 1; Comanche, 7; Crawford, 3; Dickinson, 3; Jefferson, 2; Montgomery, 1; Osage, 1; Pottawatomie, 1; Rawlins, 1; Reno, 5; Sedgwick, 5; Wyandotte, 28.

Massachusetts—New Bedford—Virulent Smallpox.

Acting Asst. Surg. Cody reported by telegraph that during the week ended July 3, 1915, one case of smallpox was notified in New Bedford, Mass., making a total of 21 cases, with 9 deaths, reported since May 15, 1915.

Minnesota.

Collaborating Epidemiologist Bracken reported by telegraph that during the week ended July 3, 1915, four new foci of smallpox infection were notified in Minnesota, cases of the disease having been notified as follows: Nobles County, Larkin Township, 1; Pine County, Kettle River Township, 1; Redwood County, Delhi Township, 3; Watonwan County, Long Lake Township, 2.

SMALLPOX—Continued.

Miscellaneous State Reports.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Arkansas (May 1-31): Counties—			Illinois (May 1-31)—Contd.		
Craighead.....	37	.....	Dekalb County—		
Crittenden.....	1	.....	Genoa Township.....	3	.....
Garland.....	9	.....	Lake County—		
Hempstead.....	4	.....	Wauconda Township.....	20	.....
Little River.....	40	.....	Madison County—		
Ouachita.....	1	.....	Nameoki Township..	9	.....
Scott.....	8	.....	Wood River Town- ship.....	2	.....
White.....	21	.....	Sangamon County—		
Total.....	121	.....	Auburn.....	1	.....
Illinois (May 1-31): ¹			Shelby County—		
Adams County—			Tower Hill.....	1	.....
Melrose Township....	2	.....	Union County—		
Cass County—			Meisenheimer Pre- cinct.....	1	.....
Virginia.....	2	.....	Williamson County—		
Coles County—			Pittsburg.....	2	.....
Mattoon.....	2	.....	Total.....	45	.....

¹ Supplemental to report published June 25, 1915, p. 1949.

City Reports for Week Ended June 19, 1915.

Place	Cases.	Deaths.	Place.	Cases.	Deaths.
Akron, Ohio.....	14	.....	Kokomo, Ind.....	1	.....
Aurora, Ill.....	1	.....	Lincoln, Neb.....	2	.....
Butte, Mont.....	1	.....	Madison, Wis.....	3	.....
Canton, Ohio.....	1	.....	Milwaukee, Wis.....	6	.....
Charleston, S. C.....	4	.....	New Bedford, Mass.....	6	2
Cincinnati, Ohio.....	1	.....	New Orleans, La.....	2	.....
Covington, Ky.....	2	.....	Newport, Ky.....	2	.....
Danville, Ill.....	1	.....	Ogden, Utah.....	1	.....
Davenport, Iowa.....	15	.....	Portland, Oreg.....	9	.....
Detroit, Mich.....	3	.....	Rock Island, Ill.....	1	.....
Galesburg, Ill.....	3	.....	Springfield, Ill.....	2	.....
Kansas City, Kans.....	7	.....	Will es-Barre, Pa.....	8	.....

TETANUS.

City Reports for Week Ended June 19, 1915.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Chicago, Ill.....	1	1	Philadelphia, Pa.....	1	1
Covington, Ky.....	1	.....	Springfield, Mass.....		1
Mobile, Ala.....		1	Syracuse, N. Y.....	2	2

TRACHOMA.

Missouri—St. Francois County.

Passed Asst. Surg. Lanza reported July 3, 1915, that trachoma was present among miners in St. Francois County, Mo.

TUBERCULOSIS.

See Diphtheria, measles, scarlet fever, and tuberculosis, page 2077.

TYPHOID FEVER.

State Reports for May, 1915.

Place.	New cases reported.	Place.	New cases reported.
Arkansas:		Hawaii:	
Boone County.....	2	Hawaii—	
Carroll County.....	1	Puna District.....	2
Columbia County.....	1	Kauni—	
Conway County.....	1	Kawailau District.....	1
Hot Spring County.....	2	Molokai.....	1
Independence County.....	1	Oahu—	
Izard County.....	2	Ewa District.....	3
Lafayette County.....	2	Honolulu.....	4
Lee County.....	2	Loolupoko District.....	2
Logan County.....	1	Total.....	13
Mississippi County.....	1		
Sebastian County.....	1		
White County.....	1		
Total.....	18		

City Reports for Week Ended June 19, 1915.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Akron, Ohio.....		1	Milwaukee, Wis.....		1
Altoona, Pa.....	12	1	Mobile, Ala.....	3	
Aurora, Ill.....	1		Nashville, Tenn.....	10	
Baltimore, Md.....	11		New Castle, Pa.....	1	
Binghamton, N. Y.....	1		New Haven, Conn.....	1	
Boston, Mass.....	6		New Orleans, La.....	6	3
Camden, N. J.....	1		Newport, R. I.....	1	1
Charleston, S. C.....	13	1	Norfolk, Va.....	3	
Chelsea, Mass.....	1		Oakland, Cal.....	2	
Chicago, Ill.....	5	3	Passaic, N. J.....		1
Cincinnati, Ohio.....	4		Philadelphia, Pa.....	9	1
Cleveland, Ohio.....	8	1	Phoenix, Ariz.....	5	
Columbus, Ohio.....	1		Pittsburgh, Pa.....	5	
Dayton, Ohio.....	1		Portland, Oreg.....	2	
Detroit, Mich.....	5	1	Portsmouth, Va.....	2	
Duluth, Minn.....	1	1	Reading, Pa.....	4	
Elmira, N. Y.....	1		Richmond, Va.....	2	
Fall River, Mass.....	2	1	Rochester, N. Y.....	1	1
Galveston, Tex.....	6	1	Saginaw, Mich.....	2	
Grand Rapids, Mich.....		1	St. Louis, Mo.....	1	1
Harrisburg, Pa.....	6		San Francisco, Cal.....	1	1
Johnstown, Pa.....	1		Schenectady, N. Y.....	1	
Kenosha, Wis.....	1		Springfield, Ill.....	1	
Key West, Fla.....	4		Steelton, Pa.....	1	
Lancaster, Pa.....	1		Toledo, Ohio.....	14	3
Lima, Ohio.....		2	Waltham, Mass.....	1	
Los Angeles, Cal.....	3		Washington, D. C.....	3	
Lowell, Mass.....	1		Wilmington, N. C.....	1	
Lynn, Mass.....	1		Worcester, Mass.....	1	
Medford, Mass.....	1		York, Pa.....	3	

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

State Reports for May, 1915.

During the month of May, 1915, 6 cases of diphtheria, 46 cases of measles, and 7 cases of scarlet fever were notified in Arkansas; 4 cases of diphtheria, 4 cases of measles, and 4 cases of scarlet fever were notified in Hawaii.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Contd.

City Reports for Week Ended June 19, 1915.

City.	Population as of July 1, 1915. (Es- timated by United States Census Bureau.)	Total deaths from all causes.	Diph- theria.		Measles.		Scarlet fever.		Tubercu- losis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Over 500,000 inhabitants:										
Baltimore, Md.	584,605	150	13	91	15	32	20			
Boston, Mass.	745,139	206	81	212	1	53	18			
Chicago, Ill.	2,447,045	612	124	18	644	15	239	95		
Cleveland, Ohio.	656,975	23	3	240	6	36	17			
Detroit, Mich.	554,717	133	32	15	1	29	10			
Philadelphia, Pa.	1,683,664	474	43	8	749	5	146	47		
Pittsburgh, Pa.	571,984	150	23	2	162	31	30	16		
St. Louis, Mo.	745,988	145	52	1	204	2	43	13		
From 300,000 to 500,000 inhabit- ants:										
Buffalo, N. Y.	461,335	61	2	1	2	21	5			
Cincinnati, Ohio.	406,706	101	16	1	64	35	21			
Jersey City, N. J.	300,133	77	20	1	133	41	15			
Los Angeles, Cal.	465,367	125	25	1	25	46	27			
Milwaukee, Wis.	428,062	68	3	1	8	18	11			
New Orleans, La.	366,484	129	14	1	1	44	21			
San Francisco, Cal.	416,912	138	33	5	6	18	14			
Seattle, Wash.	350,834	39	1	20	2	23	5			
Washington, D. C.	358,679	121	3	87	24	19	12			
From 200,000 to 300,000 inhabit- ants:										
Columbus, Ohio.	209,722	73	3	25	1	11	7			
Portland, Oreg.	272,833	26	8	8	4	5	3			
Providence, R. I.	250,025	59	4	1	7	1	7			
Rochester, N. Y.	250,747	60	49	1	3	9	7			
From 100,000 to 200,000 inhabit- ants:										
Bridgeport, Conn.	118,434	21	5	1	2	2	1			
Cambridge, Mass.	111,669	8	8	1	18	15	4			
Camden, N. J.	104,349	3	3	7	11	4	6			
Dayton, Ohio.	125,509	32	3	3	10	9	6			
Fall River, Mass.	126,904	33	3	5	4	7	1			
Grand Rapids, Mich.	125,759	23	1	4	1	7	2			
Hartford, Conn.	108,969	5	2	3	3	5	4			
Lowell, Mass.	112,124	23	8	1	2	4	3			
Lynn, Mass.	100,316	20	20	1	2	4	3			
Nashville, Tenn.	115,978	4	4	2	4	7	1			
New Bedford, Mass.	114,694	37	4	90	3	12	1			
New Haven, Conn.	147,095	5	5	22	4	3	1			
Oakland, Cal.	190,803	2	2	2	1	3	4			
Reading, Pa.	105,094	41	2	4	8	2	4			
Richmond, Va.	154,674	63	2	2	4	6	3			
Springfield, Mass.	103,216	24	1	30	1	5	3			
Syracuse, N. Y.	152,534	44	16	91	1	10	5			
Toledo, Ohio.	187,840	60	5	26	1	11	4			
Trenton, N. J.	109,212	37	21	1	1	3	1			
Worcester, Mass.	160,523	35	3	2	1	5	5			
From 50,000 to 100,000 inhabit- ants:										
Akron, Ohio.	82,958	25	2	3	1	1	1			
Altoona, Pa.	57,606	16	3	1	1	2	1			
Atlantic City, N. J.	55,806	7	1	21	3	6	1			
Bayonne, N. J.	67,582	2	2	3	1	2	4			
Berkeley, Cal.	54,879	6	3	1	1	2	3			
Binghamton, N. Y.	53,082	25	3	1	2	7	1			
Brockton, Mass.	65,746	12	4	41	2	3	1			
Canton, Ohio.	59,139	9	4	6	1	1	2			
Charleston, S. C.	60,427	13	2	3	10	3	2			
Covington, Ky.	56,520	13	2	1	3	1	2			
Duluth, Minn.	91,913	13	1	1	3	1	1			
Erie, Pa.	73,798	16	3	1	4	1	1			
Evansville, Ind.	72,125	22	3	1	1	1	1			
Harrisburg, Pa.	70,754	13	3	6	1	4	1			
Johnstown, Pa.	66,585	6	6	9	1	2	1			
Kansas City, Kans.	96,854	26	5	15	3	6	1			
Lancaster, Pa.	50,269	28	1	2	5	1	2			
Lawrence, Mass.	98,197	7	7	12	1	2	2			
Little Rock, Ark.	55,158	7	2	1	1	2	1			
Malden, Mass.	50,067	24	1	1	1	2	2			
Manchester, N. H.	76,959	24	1	1	1	2	2			

¹ Population April 15, 1910; no estimate made.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Contd.

City Reports for Week Ended June 19, 1915—Continued.

City.	Population as of July 1, 1915. (Es- timated by United States Census Bureau.)	Total deaths from all causes.	Diph- theria.		Measles.		Scarlet fever.		Tubercu- losis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 50,000 to 100,000 inhabit- ants—Continued.										
Mobile, Ala.	56,536	26	1						2	
New Britain, Conn.	52,203								1	
Norfolk, Va.	88,076								3	3
Passaic, N. J.	69,010	20	6	1	1		16		2	4
Pawtucket, R. I.	58,156	19	1				3		2	3
Rockford, Ill.	53,761	12	1				4			
Sacramento, Cal.	64,806	15	1						3	1
Saginaw, Mich.	54,815	10							1	
San Diego, Cal.	51,115		5				2			
Schenectady, N. Y.	95,265	11	1		7		5		2	1
Somerville, Mass.	85,460	14	3		8		7		3	2
South Bend, Ind.	67,030	8			9		1			
Springfield, Ill.	59,468	15	3	1	1					2
Wilkes-Barre, Pa.	75,218	19	4		11					2
York, Pa.	50,543						2			
From 25,000 to 50,000 inhabitants:										
Alameda, Cal.	27,031		1				1			
Auburn, N. Y.	36,947	10	1	1			4		6	
Aurora, Ill.	33,613		1		95					
Brookline, Mass.	31,934	4	1		3		2		1	
Butler, Pa.	26,587									1
Butte, Mont.	42,918	11	1		5		1		1	
Chelsea, Mass.	32,452	9	3		3				3	
Chicopee, Mass.	28,688	3			4		2			
Cumberland, Md.	25,564	3	1		2		2		1	
Danville, Ill.	31,554	8					1		4	2
Davenport, Iowa.	47,127		1							
East Orange, N. J.	41,155		3						1	
Elgin, Ill.	27,844	5	1		4		2	1		
Elmira, N. Y.	37,968				20					1
Everett, Mass.	38,307	6	2		1		5		1	
Fitchburg, Mass.	41,144	12					2		2	1
Galveston, Tex.	41,076	10	1				2		1	
Haverhill, Mass.	47,774	14	2		8		4		3	3
Kalamazoo, Mich.	47,364	18	2				1		4	
Kenosha, Wis.	30,319	7			1					
Lexington, Ky.	39,703	5			15		2	1	12	3
Lima, Ohio.	34,644	6			5		1			
Lincoln, Nebr.	46,028	7	1		3					
Lorain, Ohio.	35,662		2		3					
Lynchburg, Va.	32,385	8								
Madison, Wis.	30,084		1						1	
McKeesport, Pa.	46,743	14					2		1	
Medford, Mass.	25,737	5	2		2		3		1	
Montclair, N. J.	25,550	7							2	3
New Castle, Pa.	40,351		1							
Newport, Ky.	31,722	12							2	2
Newport, R. I.	29,631	9								1
Newton, Mass.	43,085	8			18		3			
Niagara Falls, N. Y.	36,240	11			6		1		2	1
Norristown, Pa.	30,833	7			1		1			1
Ogden, Utah.	30,466	3								
Orange, N. J.	32,524	9					2			1
Perth Amboy, N. J.	39,725		6		4				2	
Pittsfield, Mass.	37,580	9			1				2	
Portsmouth, Va.	38,610	10			5					2
Racine, Wis.	45,507	12			21		4		2	1
Rock Island, Ill.	27,961	6	1		1		1		1	2
South Omaha, Nebr.	26,394	4								
Steubenville, Ohio	26,631	9					1			
Stockton, Cal.	34,508		1				2			1
Superior, Wis.	45,285	6					1			
Taunton, Mass.	35,957	16			5					1
Waltham, Mass.	30,129	9			39		2		1	1
West Hoboken, N. J.	41,893	3			2		1		3	
Wheeling, W. Va.	43,097	15			1		4			
Williamsport, Pa.	33,495	9	3		2					
Wilmington, N. C.	28,264	14	1							1
Woonsocket, R. I.	43,355		1	1			1			
Zanesville, Ohio.	30,406						2			

¹ Population Apr. 15, 1910; no estimate made.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Contd.

City Reports for Week Ended June 19, 1915—Continued.

City.	Population as of July 1, 1915. (Es- timated by United States Census Bureau.)	Total deaths from all causes.	Diph- theria.		Measles.		Scarlet fever.		Tuber- culosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 10,000 to 25,000 inhabitants:										
Ann Arbor, Mich.....	14,979	7	4						5	
Braddock, Pa.....	21,310				1					
Cairo, Ill.....	15,593	3								
Clinton, Mass.....	¹ 13,075	2	1		1				1	
Coffeyville, Kans.....	16,765								1	
Concord, N. H.....	22,480	5	1							1
Harrison, N. J.....	16,555				1				2	
Kearney, N. J.....	22,753	6	1		4				1	
Key West, Fla.....	21,437	7			1		1			1
Kokomo, Ind.....	20,312	7			24					
Melrose, Mass.....	17,166	7	2				5		1	1
Morristown, N. J.....	13,158	3							1	1
Muscatine, Iowa.....	17,287	6							1	
Nanticoke, Pa.....	22,441	4			8					
Newburyport, Mass.....	15,195	5			7		1			
New London, Conn.....	20,771	8	1		1					
North Adams, Mass.....	¹ 22,019	7			1				1	
Northampton, Mass.....	19,846	8							5	2
Phoenix, Ariz.....	17,798	7	1							3
Plainfield, N. J.....	23,280	3	1		2				2	
Rutland, Vt.....	14,624	1	2				2			
Saratoga Springs, N. Y.....	12,842	6			5					1
Steelton, Pa.....	15,337	1							2	
Wilkinsburg, Pa.....	22,361	13			2				1	3
Woburn, Mass.....	15,862	2								

¹ Population Apr. 15, 1910, no estimate made.

FOREIGN REPORTS.

CHINA.

Plague—Plague-Infected Rats—Hongkong.

During the week ended May 8, 1915, 12 cases of plague with 10 deaths were notified at Hongkong.

During the same period, out of 2,184 rats examined at Hongkong, 5 were found plague infected.

Plague-Infected Rats—Shanghai.

During the week ended May 22, 1915, out of 245 rats examined at Shanghai, 3 were found plague infected.

GREAT BRITAIN.

Examination of Rats—Liverpool.

During the two weeks ended June 5, 1915, 294 rats were examined at Liverpool. No plague-infected rat was found. The total number of rats examined from July 25, 1914, to June 5, 1915, was 9,640.

TYPHUS FEVER.

Reports Received During Week Ended July 9, 1915.¹

Place.	Date.	Cases.	Deaths.	Remarks.
Austria-Hungary: Budapest.....	May 2-15.....	11	4	Among military, 8 cases with 2 deaths.
Egypt: Cairo.....	Apr. 30-May 6.....	7	18	
Port Said.....	.....do.....	5	2	
Germany: Frankfort on Main.....	May 30-June 5.....	.....	1	
Kongsberg.....	.....do.....	1	1	
Great Britain: Dublin.....	May 30-June 5.....	2	.....
Japan: Tokyo.....	May 18-30.....	22	.....
Mexico: Aguascalientes.....	June 14-20.....	.....	1	
Russia: Petrograd.....	May 2-8.....	2	2	
Switzerland: St. Gall.....	May 23-29.....	1	.....
Zurich.....	June 6-12.....	1	.....
Turkey in Asia: Mersina.....	May 16-22.....	1	.....

¹ From medical officers of the Public Health Service, American consuls, and other sources.

TYPHUS FEVER—Continued.

Reports Received from June 26 to July 2, 1915.¹

Place.	Date.	Cases.	Deaths.	Remarks.
Austria-Hungary:				
Austria.....	Apr. 25-May 8....	645		Mainly among soldiers, prisoners of war, and persons from Galicia; 6 among the civil population, of which 1 in Vienna.
Canary Islands:				
Santa Cruz de Tenerife....	May 16-22.....		1	
China:				
Hungtashotze Station.....	Apr. 19-25.....	1		On Eastern Chinese Ry.
Dutch East Indies:				
Java.....	Apr. 25-May 1....	13	3	Mid-Java.
Do.....	Apr. 27-May 10....	22	4	West Java.
Germany.....	May 16-22.....	12		In German soldiers and 1 prison-camp employee; among prisoners of war in 14 districts and in Saxony and Hesse.
Great Britain and Ireland:				
Dublin.....	May 23-29.....	3		
Glasgow.....	May 29.....	1		
Italy:				
Turin.....	May 17-23.....	1		
Russia:				
Moscow.....	May 2-15.....	75	26	
Warsaw.....				Sept. 27-Oct. 31, 1914: Cases, 31. Prevalent.
Serbia.....	Apr. 27.....			
Switzerland:				
Zurich.....	May 30-June 5....	1		
Turkey in Asia:				
Adana.....	May 9-15.....			Present.
Jaffa.....	Apr. 25-May 1....	4	3	
Mersina.....	May 9-15.....		2	
Tarsus.....	do.....			Do.

¹ For reports received from Jan. 1 to June 25, 1915, see PUBLIC HEALTH REPORTS for June 25, 1915. In accordance with custom, the tables of epidemic diseases are terminated semiannually and new tables begun.

CHOLERA, PLAGUE, AND SMALLPOX.

Reports Received During Week Ended July 9, 1915.¹

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
Austria-Hungary				
Austria—				
Vienna.....	May 9-15.....	3	3	Among military and prisoners of war.
Hungary.....	Apr. 26-May 2....	32	13	Mainly among soldiers and prisoners of war.
Ceylon:				
Colombo.....	Apr. 25-May 1....	7		
India:				
Calcutta.....	May 2-8.....	37	29	
Madras.....	May 9-15.....		1	
Indo-China:				
Saigon.....	May 2-15.....	156	52	

PLAGUE.

China:				
Amoy.....	May 2-8.....			Present. Also present in Sio-Khe Valley, 60 miles inland from Amoy.
Hongkong.....	May 16-22.....	18	16	Jan. 1-May 27, 1915: Cases, 101; deaths, 50.
Egypt:				
Alexandria.....	May 21-27.....		1	
Assiout, province.....	do.....	3		
Fayoum, province.....	do.....	4	1	
Galioubeh, province.....	do.....	1		

¹ From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, AND SMALLPOX—Continued.

Reports Received During Week Ended July 9, 1915—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
India:				
Bassein.....	Apr. 25-May 1.....		7	
Bombay.....	May 9-15.....	42	40	
Calcutta.....	May 2-8.....	16	16	
Karachi.....	do.....	190	150	
Mandalay.....	Apr. 25-May 1.....		1	
Pegu.....	do.....		4	
Rangoon.....	May 2-8.....	5	4	
Toungoo.....	Apr. 25-May 1.....		2	
Indo-China:				
Saigon.....	May 9-15.....	3	2	
Turkey in Asia:				
Bagdad.....	May 2-15.....	418	293	

SMALLPOX.

Place.	Date.	Cases.	Deaths.	Remarks.
Australia:				
New South Wales—				
New Castle district—				
Kurri.....	May 26.....	2		
Austria-Hungary:				
Budapest.....	May 2-15.....	60	1	
Dalmatia, province.....	May 2-8.....	1		
Vienna.....	May 23-29.....	15	4	
Brazil:				
Rio de Janeiro.....	Apr. 18-May 22.....	74	17	
Canada:				
Ontario—				
Toronto.....	June 20-26.....	2		
Quebec—				
Montreal.....	do.....	2		
Ceylon:				
Colombo.....	Apr. 25-May 1.....	4		
China:				
Foochow.....	May 16-22.....			Present.
Hongkong.....	do.....	3	1	
Shanghai.....	May 17-30.....	2	1	
Tientsin.....	May 16-22.....		1	
Egypt:				
Cairo.....	Apr. 30-May 6.....		2	
Germany:				
Government districts—				
Gumbinnen.....	May 23-29.....	2		
Marlenwerder.....	do.....	2		
Great Britain:				
London.....	June 6-12.....	1		
India:				
Bombay.....	May 9-15.....	27	17	
Calcutta.....	May 2-8.....	57	57	
Karachi.....	do.....	8		
Rangoon.....	do.....	9	2	
Italy:				
Milan.....	Apr. 1-30.....	1		
Japan:				
Taiwan, island of.....	May 23-29.....	1		
Mexico:				
Aguascalientes.....	June 14-20.....		1	
Frontera.....	May 29-June 5.....	15	8	
Monterey.....	June 14-20.....	3		
Vera Cruz.....	June 7-13.....	10	14	
Portugal:				
Lisbon.....	May 30-June 5.....	3		
Spain:				
Seville.....	May 1-31.....		4	
Turkey in Asia:				
Bagdad.....	May 2-8.....			Do.
Jaffa.....	May 9-15.....	1		

CHOLERA, PLAGUE, AND SMALLPOX—Continued.

Reports Received from June 26 to July 2, 1915.¹

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
Austria-Hungary:				
Austria.....	May 2-8.....	2	-----	
Bosnia-Herzegovina.....	Apr. 25-May 1.....	62	21	5 cholera carriers in 3 localities.
Croatia-Slavonia.....	May 3-10.....	19	3	14 among soldiers.
Hungary.....	Apr. 19-25.....	14	7	7 (3) soldiers, 3 (3) prisoners of war, 1 civilian from scene of war.
China:				
Hongkong.....	May 2-8.....	1	1	
Dutch East Indies:				
Java—				
Batavia.....	Apr. 25-May 8.....	26	24	
India:				
Bassein.....	Apr. 18-24.....	-----	14	
Calcutta.....	Apr. 25-May 1.....	50	43	
Madras.....	May 2-8.....	1	1	
Rangoon.....	Apr. 24-May 1.....	1	2	

PLAGUE.

Dutch East Indies:				
Java—				
Surabaya.....	Apr. 18-24.....	2	2	City and district.
Egypt:				Jan. 1-May 20, 1915: Cases, 93; deaths, 48.
Assiout, Province.....	May 14-20.....	3	1	
Fayoum, Province.....	.....do.....	2	-----	
Minieh, Province.....	.....do.....	4	2	
Port Said.....	.....do.....	1	1	
Hawaii:				
Pauuhau.....	June 29.....	1	-----	
India:				
Bassein.....	Apr. 18-24.....	-----	15	
Bombay.....	May 2-8.....	43	37	
Calcutta.....	Apr. 25-May 1.....	15	15	
Myingyan.....	Apr. 5-17.....	-----	1	
Pegu.....	Apr. 18-24.....	-----	1	
Rangoon.....	Apr. 18-May 1.....	7	7	
Peru:				
Callao.....	May 3-9.....	1	-----	
Lima (city).....	.....do.....	1	-----	
Mollendo.....	.....do.....	1	-----	
Trujillo.....	.....do.....	2	-----	
Straits Settlements:				
Singapore.....	Apr. 25-May 1.....	1	1	

SMALLPOX.

Australia:				
Victoria—				
Melbourne.....	Apr. 20.....	1	-----	At Point Nepean quarantine station from S. S. Lord Derby from Rangoon.
Western Australia—				
Freemantle.....	Apr. 27.....	1	-----	At Woodman's Point quarantine station from S. S. City of Baroda from Calcutta via Colombo.
Austria-Hungary:				
Austria.....	May 2-8.....	151	-----	
Vienna.....	-----	-----	-----	Total in Vienna, August, 1914-May 8, 1915: Cases, 1,487; deaths, 316.
Canada:				
Ontario—				
Sarnia.....	June 13-19.....	1	-----	
Toronto.....	June 6-12.....	3	-----	
Quebec—				
Montreal.....	June 13-19.....	2	-----	

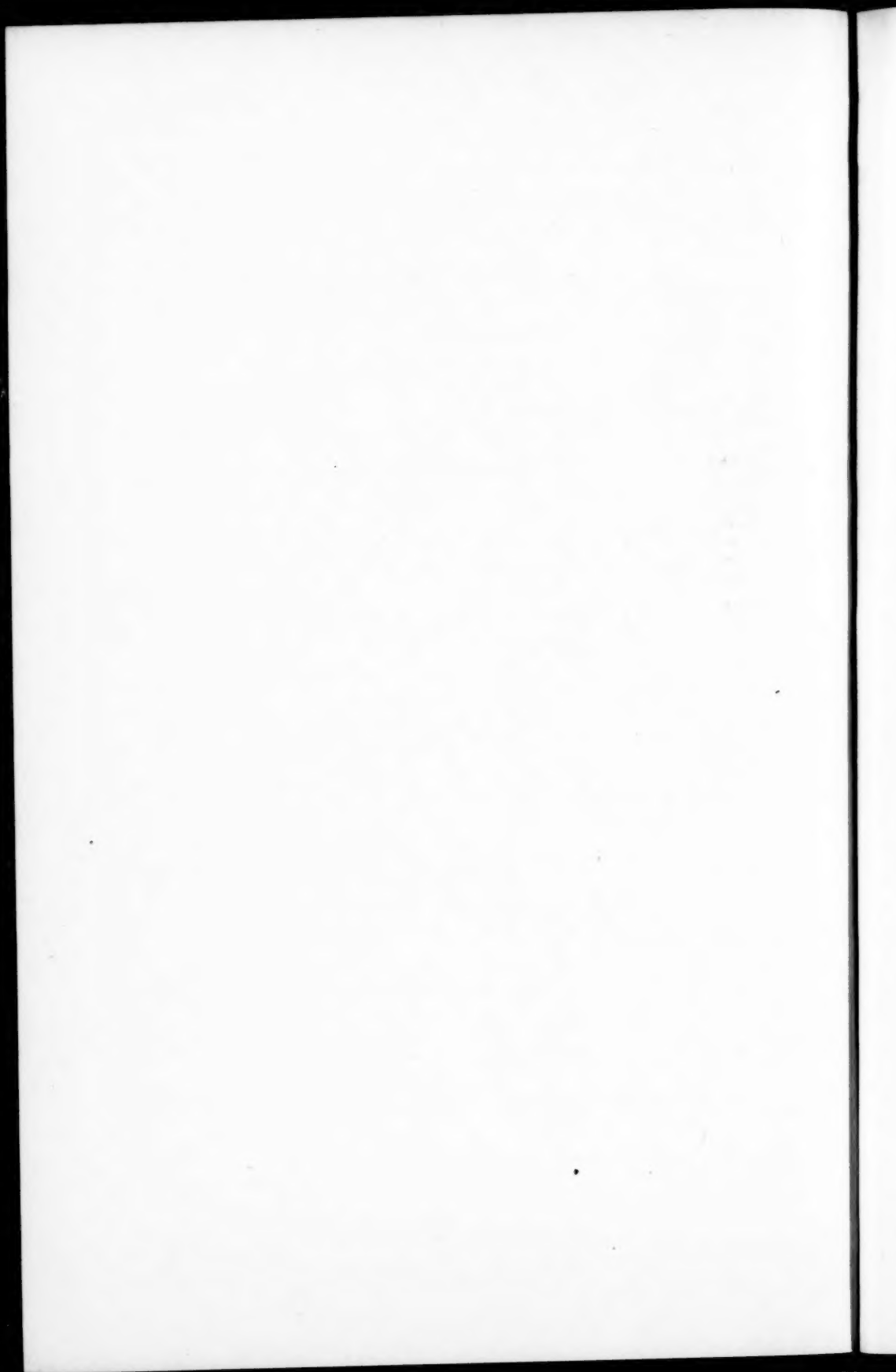
¹ For reports received from Dec. 26, 1914, to June 25, 1915, see PUBLIC HEALTH REPORTS for June 25, 1915. In accordance with custom, the tables of epidemic diseases are terminated semiannually and new tables begun.

CHOLERA, PLAGUE, AND SMALLPOX—Continued.

Reports Received from June 26 to July 2, 1915—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Foochow.....	May 9-15.....	.....	.....	Present.
Shanghai.....	May 9-16.....	.....	1	Native.
Dutch East Indies:				
Java.....	Apr. 18-May 1.....	24	13	Mid Java.
Do.....	Apr. 27-May 10.....	187	51	West Java.
Batavia.....	Apr. 25-May 8.....	.....	12	Natives.
Germany.....				Total, May 16-22, 1915: 1 case.
Oppeln district.....	May 16-22.....	1	.....	Prisoner of war.
Great Britain:				
London.....	May 30-June 5....	2	.....
Greece:				
Saloniki.....	May 23-29.....	.....	1	
India:				
Bombay.....	May 2-8.....	26	22	
Calcutta.....	Apr. 25-May 1.....	75	55	
Madras.....	May 2-8.....	2	.....
Pegu.....	Apr. 18-24.....	.....	1	
Rangoon.....	Apr. 18-May 1.....	23	11	
Mexico:				
Aguascalientes.....	June 7-13.....	.....	3	
Frontera.....	May 23.....	22	10	
Progreso.....	June 6-12.....	.....	1	
Portugal:				
Lisbon.....	May 23-29.....	5	.....
Russia:				
Moscow.....	May 2-15.....	19	5	
Riga.....	May 9-22.....	18	.....
Warsaw.....	.....	.....	.....	Sept. 27-Oct. 31, 1914: Cases, 51; deaths, 16.
Serbia.....	Apr. 21-May 3....	356	.....
Spain:				
Valencia.....	May 30-June 5....	8	5	
Switzerland:				
Basel.....	May 16-29.....	9	.....
Turkey in Asia:				
Haifa.....	May 3-9.....	4	.....
Tripoli.....	May 2-8.....	.....	.....	Do.



SANITARY LEGISLATION.

COURT DECISIONS.

MASSACHUSETTS SUPREME JUDICIAL COURT.

Workmen's Compensation Act—Suicide Resulting from Insanity Caused by Injury.

In re SPONATSKI, 108 N. E., Rep., 466. (Mar. 31, 1915.)

The deceased committed suicide while suffering from insanity which was caused by an injury received in the course of his employment. The court held that his dependents were entitled to compensation under the Massachusetts Workmen's Compensation Act.

RUGG, C. J.: The deceased employee received an injury in the course of and arising out of his employment through a splash of molten lead into his eye on September 17, 1913. He was treated at a hospital until October 13, 1913, when, as was found by the industrial accident board, "while insane as a result of his injury he threw himself from a window and was fatally injured." The board found further that "this insanity was brought about and resulted from the injury," and that, while the evidence was very close upon that point, the death "did result from 'an uncontrollable impulse and without conscious volition to produce death,' " under *Daniels v. New York, New Haven & Hartford Railroad* (183 Mass., 393, 400, 67 N. E., 424, 62 L. R. A., 751). The arbitration committee, whose findings were affirmed and adopted by the industrial accident board, put it this way:

We find and decide as a fact that the accident injured the eyesight of the deceased, caused the loss of his eye, caused a nervous and mental derangement, caused insane hallucinations, and caused him, while mentally deranged, in a state of insanity and under the influence of hallucination, by an irresistible impulse, to commit suicide, and that the accident was the sole, direct, and proximate cause of the suicide.

The insurer contends that these findings are not warranted by the evidence. That question is open to it, for the substance of the evidence is reported. (*Pigeon's Case*, 216 Mass., 51, 102 N. E., 932.)

The burden of proving the essential facts necessary to establish a case warranting the payment of compensation rests upon the dependents in a case arising under the workmen's compensation act as much as it does upon a plaintiff in any proceeding at law. The dependents must go further than simply to show a state of facts which is as equally consistent with no right to compensation as it is with such right. They can no more prevail if factors necessary to support the claim are left to surmise, conjecture, guess, or speculation, than can a plaintiff in the ordinary action in tort or contract. A sure foundation must be laid by a preponderance of evidence in support of the claim before the dependents can succeed. The elements that need to be proved are quite different from those in the ordinary action at law or suit in equity, but, so far as these elements are essential, they must be proved by the same degree of probative evidence. Of course this does not mean, as was said by Lord Loreburn in *Marshall v. Owners of Steamship Wild Rose* [1910], A. C., 486, "that he must demonstrate his case. It only means, if there is no evidence in his favor upon which a reasonable man can act, he will fail."

If the evidence, though slight is yet sufficient to make a reasonable man conclude in his favor on the vital points, then his case is proved. But the rational mind must not be left in such uncertainty that these essential elements are not removed from the realm of fancy. *Plumb v. Cobden Flour Mills Co. (Ltd.)*, [1914] A. C., 62; *Barnabas v. Busham Colliery Co.*, 4 B. W. C. C., 119 (House of Lords); *Flecher v. Owners of the Ship Dutchess* [1911], A. C., 671. See also *Childs v. American Express Co.*, 197 Mass. 337, 84 N. E. 128; *Bigwood v. Boston & Northern St. Ry.*, 209 Mass., 345, 95 N. E. 751, 35 L. R. A. (N. S.), 113. The board instructed itself as matter of law, in accordance with the substance of these propositions as requested by the insurer, and no error is shown in this regard.

There was evidence tending to show that, although for a time after the injury the deceased was in his normal temperament, which was hopeful and joyous, he then became silent and moody, and was depressed, and suffered from certain marked hallucinations. He did not appear affectionate as he always theretofore had been toward his wife and young children: There were two witnesses of the event which directly produced his death. One gave the following description:

That morning I was making my first visit to the ward. * * * Mr. Sponatski was sitting on the window sill leaning against the frame and his feet were up against the other side. The window was open and he was looking out and I spoke to him and asked him to come down. He turned around and gave me a kind of wild look. I thought he was getting off the window sill. He let one foot down and raised up on the other knee and at that he got up on the window sill and leaped right out. * * * It happened very quick. * * * He had a wild look; he looked as if he was frightened. * * * He appeared as if he had just woke up out of a deep thought. Kind of wild.

The other said that after he was spoken to—

he hesitated a few minutes; he looked as blank; he was undecided what to do; [he had] a very wild, glassy look. He didn't seem to act as though he heard at all—just looked blank. He had a vacant stare as though he didn't see you—as though he was picturing things he didn't see; things in his imagination. He didn't pay a bit of attention to us at all. * * * just as if you were not there.

The medical examiner who made a post-mortem examination of the brain testified that the deceased—

did not have any form of insanity, except possibly general paresis, but for any other form I could not express an opinion.

An alienist of experience testified that probably there was developed from the accident a "mental condition" accompanied by "hallucinations and delusions and as a result committed suicide." After his death a letter, which the board decided was written by him, was found under his pillow, as follows:

My wife folks are not to blame for anything; my wife was a pure woman when I married her; she is pure to this day; it is all my own fault.

(Signed) MARTIN SPONATSKI.

Aside from this there was no evidence tending to show that he had contemplated suicide or that the jumping from the window was the exercise of even a "moderately intelligent power of choice."

The letter does not seem to us necessarily indicative of a suicidal purpose. It was not signed by the name of the deceased, which was Charles J. Sponatski. It apparently was wholly the product of a disordered intellect. It is as consistent with some other phantom of an unbalanced imagination as it is with a volition to end his life. The circumstances of the leap from the window as narrated by all the eyewitnesses point rather to ungovernable lunacy than to the volition even of a diseased mind. The finding in this respect, although hanging on a rather slender thread of evidence, is not unsupported. Therefore it must stand.

This decision rests upon the rule established in *Daniels v. New York, New Haven & Hartford Railroad* (183 Mass., 393, 67 N. E., 424; 62 L. R. A., 751). That rule applies to cases arising under the workmen's compensation act. It is that where there follows as the direct result of a physical injury an insanity of such violence as

to cause the victim to take his own life through an uncontrollable impulse or in a delirium of frenzy "without conscious volition to produce death, having knowledge of the physical consequences of the act," then there is a direct and unbroken causal connection between the physical injury and the death. But where the resulting insanity is such as to cause suicide through a voluntary willful choice determined by a moderately intelligent mental power which knows the purpose and the physical effect of the suicidal act even though choice is dominated and ruled by a disordered mind, then there is a new and independent agency which breaks the chain of causation arising from the injury. (See *McDonald v. Snelling*, 14 Allen, 290; 92 Am. Dec., 768.)

The industrial accident board was in error in instructing itself:

That the rule laid down in the Daniels case is not the rule to be followed under the workmen's compensation act. In other words, the question is not whether the consequence is a reasonable and probable one, but whether the consequence resulted from the injury.

No question of negligence in its common-law sense, or of reasonable and probable consequence, was involved or discussed in the Daniels case. That was an action brought under Pub. Sts. c. 112, sec. 213, now St. 1906, c. 463, part 2, sec. 245, to recover damages for conscious suffering and death caused by failure on the part of the defendant railroad to give the statutory signals of warning where a railroad crossed a highway at grade. Under that statute the liability of the railroad is made out when the fact of failure to give the statutory signals is established (unless a special defense prevails).

The inquiry as to reasonable and probable consequences did not arise in the Daniels case; but it does arise in actions at common law and under some other statutes in order to decide whether there has been negligence. Even then the question is not whether "the consequence is a reasonable and probable one," but whether harm to some one of the same general kind as that sustained by the plaintiff was a reasonable and probable result of the act complained of, as bearing upon the ultimate question whether there was negligence on the part of the defendant. Negligence may be found even though the particular result of the act may not have been susceptible of being foreseen. (See *Ogden v. Aspinwall*, 107 N. E., 448, and cases there collected; *Larson v. Boston Elev. Ry.*, 212 Mass., 262, 98 N. E., 1048; *Wiemert v. Boston Elev. Ry.*, 216 Mass., 598, 104 N. E., 360; *Brightman's Case*, 220 Mass., 17, 107 N. E., 527.)

Other instances where liability is not predicated upon negligence, and where therefore there is no occasion to consider in any aspect natural and probable consequences, are actions to recover damages arising from fires set by locomotive engines (*Bowen v. Boston & Albany R. R.*, 179 Mass., 524, 61 N. E., 141); from a vicious animal knowingly kept (*Marble v. Ross*, 124 Mass., 44); from dogs (*Pressey v. Wirth*, 3 Allen, 191); or from the breaking away of impounded waters (*Rylands v. Fletcher*, L. R. 3 H. L., 330). So far as concerns conduct of defendants, liability follows absolutely in such cases when the particular decisive fact is shown to exist.

The obligation to pay compensation under the workmen's compensation act equally is absolute when the fact is established that the injury has arisen "out of and in the course of" the employment. (Pt. 2, sec. 1.) It is of no significance whether the precise physical harm was the natural and probable or the abnormal and inconceivable consequence of the employment. The single inquiry is whether in truth it did arise out of and in the course of that employment. If death ensues, it is immaterial whether that was the reasonable and likely consequence or not; the only question is whether in fact death "results from the injury." (Pt. 2, sec. 6.) When that is established as the cause, then the right to compensation is made out.

If the connection between the injury as the cause and the death as the effect is proven, then the dependents are entitled to recover, even though such a result before that time may never have been heard of and might have seemed impossible. The inquiry relates solely to the chain of causation between the injury and the death. (*Dunham v. Clare* [1902], 2 K. B., 292; *Ystradowen Colliery Co. (Ltd.) v. Griffiths*

[1909], 2 K. B., 533; see also *Southall v. Cheshire County News Co. (Ltd.)*, 5 B. W. C. C.; 251; *Malone v. Cayzer, Irvine & Co.*, 45 Sc. L. R., 351.) In deciding whether the chain of causation between the injury and the death is broken by the intervention of some independent agency, the rule of *Daniels v. N. Y., N. H. & H. R. R.* (183 Mass., 393; 67 N. E., 424; 62 L. R. A., 751), is to be followed under the workmen's compensation act as well as in other cases to which the rule is applicable. There is no difference between the rule laid down in the *Daniels* case and that in the English cases just cited. But this error in law did not affect the result reached by the industrial accident board. The decision of the board rests upon the rule of the *Daniels* case and hence need not be disturbed.

What has been said disposes of all the requests for rulings presented by the insurer. It does not appear that the board misdirected itself in any matter of law material to its decision on the facts found.

Decree affirmed.

STATE LAWS AND REGULATIONS PERTAINING TO PUBLIC HEALTH.

NEW YORK.

Local Health Organizations—Consolidation of Municipalities into Health Districts Authorized. (Chap. 555, Act May 8, 1915.)

SECTION 1. Section 20 of chapter 49 of the laws of 1909, entitled "An act in relation to the public health, constituting chapter forty-five of the consolidated laws," as amended by chapter 165 of the laws of 1909, chapter 559 of the laws of 1913, and chapter 124 of the laws of 1915 is hereby further amended to read as follows:

SEC. 20. *Local boards of health.*—There shall continue to be local boards of health and health officers in the several cities, villages, and towns of the State except as hereinafter provided. In the cities, except cities of the first and second class, the board shall consist of the mayor of the city, who shall be its president, and at least six other persons, one of whom shall be a competent physician, who shall be appointed by the common council, upon the nomination of the mayor, and shall hold office for three years. Appointments of members of such boards shall be made for such shorter terms as at any time may be necessary, in order that the terms of two appointed members shall expire annually. In the cities, except cities of the first and second class, and such other cities whose charters otherwise provide, the board shall appoint, for a term of four years, a competent physician, not one of its members, to be the health officer of the city, and shall fill any vacancy that now exists or may hereafter exist from expiration of term or otherwise in the office of health officer of the city. In villages the board shall consist of the board of trustees of such village. In towns the board of health shall consist of the town board. The local board of health shall appoint a competent physician, not a member of the local board of health, to be the health officer of the municipality. The term of office of the health officer shall be four years, and he shall hold office until the appointment of his successor. He may be removed for just cause by the local board of health or the State commissioner of health after a hearing; such removal by the local board of health must be approved by the State commissioner of health. The health officer need not reside within the village or town for which he shall be chosen. Notice of the membership and organization of every local board of health shall be forthwith given by such board to the State department of health. The term "municipality," when used in this article, means the city, village, or town or consolidated health district for which any such local board may be or is appointed. The provisions herein contained as to boards of health, and for the appointment of health officers, shall apply to all towns and villages, whether such villages are organized under general or special laws. The members of town boards and of village boards of trustees and of boards of health of consolidated health districts shall not receive additional compensation by reason of serving as members of boards of health. Any matter within the jurisdiction of a town or village board of health may be considered and acted upon at any meeting of such town board or village board of trustees.

The State commissioner of health, on the request of the town board of any town and the board of trustees of any village and the common council or other like authority of any city, may combine into one health district, hereinafter referred to as a consolidated health district, any two or more of such towns, villages, or cities within one

county and may on the request of the town board of any town, board of trustees of any village, or common council or other like authority of any city at any time thereafter set apart such town, village, or city as a separate health district. In any consolidated health district there shall be a board of health which shall consist of the supervisor of each town, the president of the board of trustees of each village, and the mayor of each city included in each district, provided that if the number of members so provided for is an even number, such members shall within 30 days after such district shall have been established by the State commissioner of health choose an additional member of such board of health to be known as the elective member. An elective member shall serve for a term of two years from the 1st day of January preceding his election and until his successor shall have been appointed, provided that if at any time the number of members of the board of health, excluding the elective member, shall by reason of the addition of an additional municipality or municipalities become an odd number, the term of office of the elective member shall thereupon cease.

The board of health of a consolidated health district shall from time to time elect a president from among its members. The health officer of a consolidated health district shall serve as the secretary of the board of health thereof without additional remuneration therefor.

In each such consolidated health district the board of health shall appoint a health officer. Each board of health and each health officer of a consolidated health district shall have all the rights, powers, duties, and obligations conferred and imposed by law upon boards of health and health officers, respectively.

When any consolidated health district is established, as herein provided, the boards of health of the towns, villages, or cities included within such district shall thereupon cease to exist as boards of health, and all their rights, powers, duties, and obligations shall thereupon be transferred to the board of health of such district. When the board of health of any such consolidated health district shall have appointed a health officer therefor the terms of office of the health officers of the towns, villages, or cities included in such district shall cease, and all their rights, powers, duties, and obligations shall thereupon be transferred to and imposed upon the health officer appointed for such consolidated health district.

The board of health of any such consolidated health district shall from time to time audit all accounts and allow or reject all charges, claims, and demands against such health district for the remuneration and expenses of the health officer, registrar, or registrars, and for all other expenses lawfully incurred by said board of health or on its authority. Such board shall annually make an abstract of the names of all persons who have presented to them accounts to be audited, the amounts claimed by each such person, and the amounts finally audited and approved by them, respectively, and shall deliver such abstract to the clerk of the board of supervisors. The board of supervisors shall levy a tax upon the real and personal property within such health district sufficient to provide for the sums audited and approved by the board of health thereof. Such sums when collected and paid to the county treasurer shall be paid by him to the president of such board of health and shall be disbursed by him in accordance with the abstract of claims audited and approved by such board of health, as hereinabove provided.

Public Water Supplies—Protection—Regulations—Inspection. (Ch. 665, Act May 20, 1915.)

SECTION 1. Sections 70, 71, and 73 of chapter 49 of the laws of 1909, entitled "An act in relation to the public health, constituting chapter forty-five of the consolidated laws," as amended by chapter 695 of the laws of 1911, are hereby amended to read as follows:

SEC. 70. *Rules and regulations of department.*—The State department of health may make rules and regulations for the protection from contamination of any or all

public supplies of potable waters and their sources within the State, and the commissioner of water supply, gas, and electricity of the city of New York, and the board of water supply of the city of New York may make such rules and regulations subject to the approval of the State department of health for the protection from contamination of any or all public supplies of potable waters and their sources within the State where the same constitute a part of the source of the public water supply of said city. If any such rule or regulation relates to a temporary source or act of contamination, any person violating such rule or regulation shall be liable to prosecution for misdemeanor for every such violation, and on conviction shall be punished by a fine not exceeding \$200, or imprisonment not exceeding one year, or both. If any such rule or regulation relates to a permanent source or act of contamination, said department may impose penalties for the violation thereof or the noncompliance therewith, not exceeding \$200 for every such violation or noncompliance. Every such rule or regulation shall be published at least once in each week for six consecutive weeks, in at least one newspaper of the county where the waters to which it relates are located. The cost of such publication shall be paid by the corporation or municipality benefited by the protection of the water supply to which the rule or regulation published relates. The affidavit of the printer, publisher, or proprietor of the newspaper in which such rule or regulation is published may be filed with the rule or regulation published, in the county clerk's office of such county, and such affidavit and rule and regulation shall be conclusive evidence of such publication, and of all the facts therein stated in all courts and places.

SEC. 71. *Inspection of water.*—The officer or board having by law the management and control of the potable water supply of any municipality, and in the city of New York, the commissioner of water supply, gas and electricity, and the board of water supply of the city of New York, or the corporation furnishing such supply, may make such inspection of the sources of such water supply as such officer, board or corporation deems advisable and to ascertain whether the rules or regulations of the State department and of the commissioner of water supply, gas and electricity of the city of New York, and of the board of water supply of the city of New York, are complied with, and shall make such regular or special inspections as the State commissioner of health, or the commissioner of the department of water supply, gas and electricity of the city of New York, or the board of water supply of the city of New York, may prescribe. If any such inspection discloses a violation of any such rule or regulation relating to a temporary or permanent source or act of contamination, such officer, board or corporation shall cause a copy of the rule or regulation violated to be served upon the person violating the same, with a notice of such violation. If the person served does not immediately comply with the rule or regulation violated, such officer, board or corporation, except in a case concerning the violation of a rule or regulation relating to a temporary or permanent source or act of contamination affecting the potable water supply of the city of New York, shall notify the State department of the violation, which shall immediately examine into such violation; and if such person is found by the State department to have actually violated such rule or regulation, the commissioner of health shall order the local board of health of such municipality wherein the violation or noncompliance occurs, to convene and enforce obedience to such rule or regulation.

If the local board fails to enforce such order within 10 days after its receipt, the corporation furnishing such water supply or the municipality deriving its water supply from the waters to which such rule or regulation relates, or the State commissioner of health or the local board of health of the municipality wherein the water supply protected by these rule is used, or any person interested in the protection of the purity of the water supply, may maintain an action in a court of record which shall be tried in the county where the cause of action arose against such person, for the recovery of the penalties incurred by such violation, and for an injunction restraining him from

the continued violation of such rule or regulation. If the person served does not comply within five days with the rule or regulation violated, in case such rule or regulation relates to a temporary or permanent source or act of contamination affecting the potable water supply of the city of New York, the commissioner of water supply, gas, and electricity of said city, or the board of water supply of the city of New York, may summarily enforce compliance with such rule or regulation, and may summarily abate or remove the cause of the violation of such rule or regulation or the nuisance so created, and to that end may employ such force as may be necessary and proper: *Provided, however,* That no building or improvements shall be removed, disturbed, or destroyed by the said commissioner of water supply, or the said board of water supply, until he or they shall cause measurements to be made of the buildings and photographs of the exterior views thereof, which measurements and photographs shall be at the disposition thereafter of the owners or their attorneys, and failure to exercise such right of abatement shall not be deemed a waiver thereof. Failure to comply within five days with such rule and regulation shall further entitle the city of New York to maintain an action in any court having jurisdiction thereof for the recovery of the penalties incurred by such violation and for an injunction restraining the person or persons violating such rule or regulation, or creating or continuing such nuisance, from the continued violation of such rule or regulation or continuance of such nuisance, the remedy by abatement being not exclusive.

Sec. 73. Sewage.—When the State department of health, or the commissioner of water supply, gas, and electricity of the city of New York, or the board of water supply of the city of New York, shall, for the protection of a water supply from contamination, make orders or regulations the execution of which will require or make necessary the construction and maintenance of any system of sewage, or a change thereof, in or for any village or hamlet, whether incorporated or unincorporated, or the execution of which will require the providing of some public means of removal or purification of sewage, the municipality or corporation owning the waterworks benefited thereby shall, at its own expense, construct and maintain such system of sewage, or change thereof, and provide and maintain such means of removal and purification of sewage and such works or means of sewage disposal as shall be approved by the State department of health, and for that purpose said municipality or corporation may acquire, under the general condemnation law, the necessary real estate or interests therein whether now used for public or private purposes. When the execution of any such regulations of the State department of health, or the commissioner of water supply, gas, and electricity of the city of New York or the board of water supply of the city of New York, will occasion or require the removal of any building or buildings, the municipality or corporation owning the waterworks benefited thereby shall, at its own expense, remove such buildings and pay to the owner thereof all damages occasioned by such removal. When the execution of any such regulation will injuriously affect any property the municipality or corporation owning the waterworks benefited thereby shall make just and adequate compensation for the property so taken or injured and for all injuries caused to the legitimate use or operation of such property. Until such construction or change of such system or systems of sewerage, and the providing of such means of removal or purification of sewage, and until such works or means of sewage disposal and the removal of any building are so made by the municipality or corporation owning the waterworks to be benefited thereby at its own expense, and until, except in the case of a municipality, the corporation owning the waterworks benefited shall make just and adequate payment for all injuries to property and for all injuries caused to the legitimate use or operation of such property, there shall be no action or proceeding taken by any such municipality, officer, board, person, or corporation against any person or corporation for the violation of any regulation of the State department of health under this article, and no person or corporation shall be considered to have violated or refused to obey any such rule or regulation.

The owner of any building the removal of which is occasioned or required, or which has been removed by any rule or regulation of the State department of health, or the commissioner of water supply, gas and electricity of the city of New York, or the board of water supply of the city of New York, made under the provisions of this article, and all persons whose rights of property are injuriously affected by the enforcement of any such rule or regulation, shall have a cause of action against the municipality or corporation owning the waterworks benefited by the enforcement of such rule or regulation, for all damages occasioned or sustained by such removal or enforcement, including all injuries caused to the legitimate use or operation of such property, and an action therefor may be brought against such municipality or corporation in any court of record in the county in which the premises or property affected is situated and shall be tried thereon; or such damage may be determined by a special proceeding in the supreme court or the county court of the county in which the property is situated. Such special proceedings shall be commenced by petition and notice to be served by such owner upon the municipality or corporation in the same manner as for the commencement of condemnation proceeding. Such municipality or corporation may make and serve an answer to such petition as in condemnation proceedings.

The petition and answer shall set forth the claims of the respective parties, and the provisions of the condemnation law shall be applicable to the subsequent proceedings upon the petition and answer, if any. Either party may, before the service of the petition or answer respectively, offer to take or pay a certain sum, and no costs shall be awarded against either party unless the judgment is more unfavorable to him than his offer. *Provided, however,* That in the case of a summary abatement by a municipality as hereinbefore provided, no costs shall be awarded against the owner of the property damaged, and the commissioners of appraisal in their report shall recommend such additional sum as may in their judgment be reasonable as compensation for witnesses and other necessary expenses of claimant. Such municipality shall, within three calendar months after the confirmation of the report of the commissioners of appraisal, pay to the respective owners and bodies politic or corporate, mentioned or referred to in said report, in whose favor any sum or sums of money shall be estimated and reported by said commissioners, the respective sum or sums so estimated and reported in their favor respectively, with lawful interest thereon. And in case of neglect or default in the payment of the same within the time aforesaid, the respective person or persons or bodies politic or corporate in whose favor the same shall be so reported, his, her, or their executors, administrators, or successors, at any time or times, after application first made by him, her, or them to such municipality for payment thereof, may sue for and recover the same, with lawful interest as aforesaid, and the costs of suit in any proper form of action against such municipality in any court having cognizance thereof, and it shall be sufficient to declare generally for so much money due to the plaintiff or plaintiffs therein by virtue of this act, and the report of said commissioners, with proof of the right and title of the plaintiff or plaintiffs to the sum or sums demanded shall be conclusive evidence in such suit or action.

SEC. 2. Article 5 of said chapter is hereby amended by adding thereto a new section, to be known as section 73a, to read as follows:

SEC. 73a. Nothing contained in this chapter shall extend the sanitary control of the board of water supply of the city of New York, beyond the sources of potable water supply, tributary to the Catskill Aqueduct; and the powers granted by this chapter to the board of water supply of the city of New York shall cease at the time of the transference of the jurisdiction over the source of water supply, by the board of water supply to the commissioner of water supply, gas, and electricity of the city of New York; and at no time shall the commissioner of water supply, gas, and electricity of the city of New York and the board of water supply of said city have or exercise concurrent

powers or sanitary control over the sources of potable water supply tributary to the Catskill Aqueduct.

Sec. 3. Nothing contained herein shall repeal or modify any of the provisions of chapter 724 of the laws of 1905, as amended by chapter 314 of the laws of 1906.

PHILIPPINE ISLANDS.

Opium Victims—Appropriation for Transportation, Maintenance, and Treatment. (Act 2488, Feb. 5, 1915.)

SECTION 1. The sum of \$25,000, or so much thereof as may be necessary, is hereby appropriated, out of any funds in the insular treasury not otherwise appropriated, for the payment of the cost of transportation to Manila, treatment in the hospital, subsistence, clothing, bedding, tobacco, mess kits, soap, barber supplies, laundry, shoes, allowance, and transportation to their homes, of prisoners not charges of the insular government, convicted and sentenced to imprisonment and medical treatment in Bilibid Prison, for violation of the laws prohibiting the use of opium.

Sec. 2. This act shall take effect as of January 1, 1915, and the funds hereby appropriated shall be available for reimbursement to the bureau of prisons of the expenses enumerated or described in section 1 hereof, beginning with said date.

MUNICIPAL ORDINANCES, RULES, AND REGULATIONS PERTAINING TO PUBLIC HEALTH.

NEWTON, MASS.

Communicable Diseases—Notification of Cases—Hospitalization—Quarantine—Placarding—Disinfection—School Attendance—Vaccination—Burial. (Reg. Bd. of H., Mar. 15, 1915.)

CHAPTER 1. 1. *Diseases dangerous to the public health.*—The diseases known as—

Actinomycosis.	Leprosy.
Anterior poliomyelitis.	Malaria.
Anthrax.	Measles.
Asiatic cholera.	Mumps.
Chicken-pox.	Pellagra.
Diphtheria.	Plague.
Dog bite (requiring antirabic treatment).	Rabies.
Dysentery:	Scarlet fever.
a. Amebic.	Septic sore throat.
b. Bacillary.	Smallpox.
Epidemic cerebrospinal meningitis.	Tetanus.
German measles.	Trichinosis.
Glanders.	Tuberculosis (all forms).
Hookworm disease.	Typhoid fever.
Infectious diseases of the eye:	Typhus fever.
a. Ophthalmia neonatorum.	Whooping cough.
b. Suppurative conjunctivitis.	Yellow fever.
c. Trachoma.	

having been declared diseases dangerous to the public health are notifiable diseases and notice of each case must be sent to the board of health as required by law.

The Newton Board of Health requires in addition notification of each case of paratyphoid fever and tonsilitis.

2. *Physicians to give notice.*—When a physician knows that a person whom he has been called to visit is sick with a disease dangerous to the public health, he shall give notice thereof in writing over his own signature to the board of health, within 24 hours. Notice of the recovery of each case must be given.

3. *Householders to give notice.*—When a householder knows that a person within his family or house is sick with a disease dangerous to the public health he shall immediately give notice thereof to the board of health and he shall also report the recovery of each case. In cases where a physician has been called in, the notification of the physician will be accepted in place of that of the householder.

4. *Persons not to attend public schools.*—No person who is ill with a disease dangerous to the public health, or any occupant of a dwelling in which a person is ill as aforesaid, shall attend any public school during such illness until the teacher of the school has been furnished with a certificate from the board of health, stating that the danger of conveying such disease by such person has passed.

5. *Exclusion from school.*—Unless otherwise ordered by the board of health, exposed children shall be excluded from school as follows:

Diphtheria.—Until one week has elapsed from the date of the last known exposure to the disease, unless immunized by antitoxin and showing a negative culture from both nose and throat.

Scarlet fever.—Until one week has elapsed from the date of the last known exposure to the disease, unless immunized by a previous attack.

Measles.—Until two weeks have elapsed from the date of the last known exposure to the disease, unless immunized by a previous attack.

Mumps.—Until two weeks have elapsed from the date of the last known exposure to the disease, unless immunized by a previous attack.

Smallpox.—Until two weeks have elapsed from the date of the last known exposure to the disease, unless immunized by a recent successful vaccination or by a previous attack.

Typhoid fever.—Until two weeks have elapsed from the date of the last known exposure to infection, unless immunized by a previous attack or by typhoid vaccine.

Whooping cough.—Until two weeks have elapsed from the date of the last known exposure to the disease, unless immunized by a previous attack.

Varicella.—Until three weeks have elapsed from the date of the last known exposure to the disease, unless immunized by a previous attack.

Anterior poliomyelitis.—Until four weeks have elapsed from the date of the report of the disease.

NOTE.—Permits for attendance at school under the above section will be issued by the board of health upon presentation of satisfactory proof of immunity.

6. *Isolation of sick persons.*—Whoever is infected with smallpox, scarlet fever, or diphtheria shall immediately be moved to some hospital set apart for the treatment of such diseases, or to some isolated place or room designated by the board of health, and no person who has been so infected shall leave such hospital or room until the board of health shall certify that all danger of communicating such disease to others has passed.

7. *Dwellings to be labeled.*—Every house in which a case of smallpox, scarlet fever, or diphtheria shall occur shall be labeled with a card bearing the name of the disease in such form and manner as may be determined by the board of health, and such placard shall not be removed except by a duly authorized agent of the board of health.

8. *Label not to be removed.*—No person shall, without permission from the board of health, remove from any dwelling any such card affixed thereto by authority of said board, nor shall any person obliterate or deface such card, nor shall the occupant of the dwelling permit such card to be removed, obliterated, or defaced, and he shall immediately notify the board of health of the removal, obliteration, or defacement of such card.

9. *Property not to be removed, nor residence changed.*—No person in whose dwelling there shall occur a case of smallpox, scarlet fever, or diphtheria, shall, until instructions are received from the board of health, permit any clothing or other article that may have been exposed to infection to be removed from the house, nor shall any occupant of such dwelling take up a residence elsewhere without the consent of the board of health, nor shall any book from a circulating or public library be taken into such house until the card has been duly removed.

10. *Persons not to enter room in which sick person is.*—No person other than the attending physician, nurse, attendant or a duly authorized agent of the board of health shall enter, nor shall any dog, cat, or other animal be allowed to enter any apartment, or other place set apart for the treatment of smallpox, scarlet fever, or diphtheria, until the board of health shall certify that it is safe to enter therein.

11. *Persons not to leave such room without permission.*—No person having the care of any other person who has been infected with smallpox, scarlet fever, or diphtheria,

shall advise or permit such other person to leave any place designated by the board of health as a place of isolation of such infected person before said board of health shall have certified that such person can leave such designated place without danger to others.

12. *Physicians not to permit persons to leave sick room.*—No physician who has been in attendance upon any person who has been infected with smallpox, scarlet fever, or diphtheria shall advise or knowingly permit such person to leave any place designated by the board of health as a place of isolation of such infected person until he has given notice in writing of the recovery of such person and until said board of health shall have certified that such infected person can leave such place without danger to others.

NOTE.—The isolation wards of the Newton Hospital and the grounds surrounding them, within the warning signs, are places of isolation within the meaning of sections 10, 11, and 12.

The board of health may, by vote, declare the provisions of sections 6 to 12, inclusive, or any of them, applicable to other diseases dangerous to the public health if in its opinion the safety of the public so requires.

13. *Funerals of persons dying of communicable diseases.*—Any person having charge of the body of a person who has died of smallpox, scarlet fever, diphtheria, measles, leprosy, yellow fever, typhus fever, Asiatic cholera, or tuberculosis shall cause such body to be washed in a solution of corrosive sublimate of the strength of 2 drachms to 1 gallon of water, and to be completely wrapped in a sheet saturated with a solution of corrosive sublimate of the same strength, and immediately placed in a coffin or casket, which shall be securely fastened and the lid thereof sealed in two places with sealing wax, and said lid shall not be opened by any person thereafter without written permission of the board of health.

The funeral shall take place in accordance with the following instructions: No public funeral shall be held; the burial shall take place within 24 hours from the time of death unless further time be allowed by the board of health; no person except members of the immediate family of the deceased and those whose business calls them there shall be permitted to attend the funeral; no draperies shall be used; no public carriage shall be used for conveying the body. If placed in a receiving tomb, the body shall be inclosed in an hermetically sealed casket.

14. *Public carriages not to be used to convey patient or body.*—No owner, driver, or other person having charge of any hackney carriage or other vehicle used as a public conveyance shall receive, or permit to be placed, or convey in any manner, in or upon such carriage or vehicle, any person sick with smallpox, scarlet fever, diphtheria, measles, yellow fever, typhus fever, or Asiatic cholera, or the body of any person who has died of either of said diseases except by written consent of the board of health and under such conditions as it may prescribe.

15. *Release from isolation.*—No person who has been sick with diphtheria shall be released from isolation until the result of two consecutive cultures, taken at an interval of at least 24 hours, from both nose and throat, has shown that it is safe to release him. The last culture in each case shall be taken under the direction of the board of health.

Cultures for release from isolation shall be examined at the laboratory maintained by the board of health unless permission is granted to have the examination made elsewhere.

If positive cultures persist, the patient may be released from quarantine when the board of health is satisfied, by inoculation experiments or otherwise, that the bacilli are nonvirulent.

A physician or other person having in his care a person suffering with scarlet fever shall report to the board of health in writing when such patient is, in his opinion, free from the disease. The board shall then cause such patient to be examined and shall release such patient from isolation when, in its opinion it is safe to do so, but no person who has been sick with scarlet fever shall be released until at least five weeks have

elapsed from the date of mailing the report of the illness and no such person shall be released during the persistence of any discharge from the ear or nose or of any lesion of the skin or mucous membranes.

No person who has been ill with measles shall be declared well until at least 10 days have elapsed from the appearance of the eruption.

No person who has been ill with German measles shall be declared well until at least seven days have elapsed from the appearance of the eruption.

No person who has been ill with varicella shall be declared well until all crusts have fallen and all lesions of the skin and mucous membranes healed.

No person who has been ill with mumps shall be declared well until three weeks have elapsed from the beginning of the disease.

No person who has been ill with whooping cough shall be declared well until at least six weeks have elapsed from the date of the report of the illness, nor until the paroxysmal stage has passed.

No person who has been ill with smallpox shall be released from isolation until all lesions are healed.

No person who has been sick with ophthalmia neonatorum shall be declared well until two successive cultures negative to gonococci have been obtained and until the purulent discharge has ceased.

No person who has been ill with typhoid fever shall be released until at least four weeks have elapsed from the date of the report of the illness and the urine and feces shown to be free from bacilli.

The time and method of release in other diseases shall be determined by the board of health, after a report has been received from the attending physician that the case is ready for inspection.

16. *Disinfection.*—When a person who has been sick with smallpox, scarlet fever, diphtheria, or tuberculosis has been removed to a hospital, has recovered, or died, the board of health shall take such measures as, in its opinion, may be necessary for the proper protection of the public.

17. *Persons with tuberculosis not to change residence without notifying the board of health.*—Whenever a person with tuberculosis changes his residence, the attending physician, if there be one, or the active head of the household in which the patient resides, shall notify the board of health of the change within 24 hours, and both of the above-mentioned persons shall be held legally responsible for violation of this order.

18. *Infected persons or articles not to be brought into the city.*—No person shall bring or cause to be brought within the limits of the city any person or article liable to propagate a dangerous disease, except by permission of the board of health and in such manner as it shall direct.

19. *Persons who have recovered from a communicable disease not to attend school without a permit.*—No person who has recovered from a disease dangerous to the public health shall be permitted to attend any public school in the city until he has presented a written permit from the board of health certifying that it is safe for him to return to school.

In cases of mumps, German measles, whooping cough, varicella, and typhoid fever these certificates will be issued by the school physician upon the return of the child after recovery.

In diphtheria, measles, scarlet fever, smallpox, anterior poliomyelitis and other diseases dangerous to the public health the certificates must be obtained from the office of the board of health.

20. *Vaccination.*—No unvaccinated child shall be permitted to attend any public school in the city, except upon presentation of a certificate granted for cause stated therein signed by a regular practicing physician that he is an unfit subject for vaccination.

Certificates of unfitness for vaccination must bear a date not more than one year previous to presentation.

Burial. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 2. 1. *Depth of graves.*—No person shall inter or cause to be interred the body of any dead person in a grave less than 3 feet deep from the surface of the ground surrounding the grave to the top of the coffin.

2. *Hours for burial.*—No person shall inter or cause to be interred the body of any dead person at any other time of the day than between sunrise and sunset, except in accordance with a permit from the board of health. No person shall open a grave or remove the body of a dead person or the remains from a grave or tomb without a permit from the board of health.

3. *Wall draperies forbidden.*—The use of wall draperies in any room or place used for a funeral or for the preparation or retention of any human body before or in connection with such funeral is forbidden.

Milk—Production, Care, and Sale. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 3. 1. *Requirements.*—No person shall engage in the sale or distribution of milk in the city of Newton except in accordance with the public statutes contained in the Revised Laws of Massachusetts, chapter 56, and in all acts in amendment thereof and in addition thereto, and the regulations adopted by the board of health of said city.

2. *License.*—No person shall engage in the sale, delivery, or distribution of milk in the city of Newton until he has made application for permission so to do, upon blanks furnished for that purpose, and received a license, which license shall expire on the 1st day of June next following unless previously revoked. No license will be issued until all the dairies supplying milk to the applicant have complied with the regulations concerning the production and care of milk. No license will be granted for the sale or distribution of milk obtained or produced from any dairy which has not been inspected by the board of health nor from any dairy refusing to allow inspection or producing milk under conditions in violation of the regulations of the board of health.

3. *Licenses not to be transferred.*—A license issued to any person under these regulations shall be conclusive evidence of ownership and shall not be sold, assigned, or transferred.

4. *Licenses to be displayed.*—Every person having a license to sell milk in the city of Newton shall keep a copy of his license constantly posted in a conspicuous place on his premises and every licensee using a wagon or other vehicle for the delivery of milk for sale shall have his name, residence, and license number, the latter preceded by the word "Newton," painted in letters and figures at least 1½ inches high, on each outer side of such wagon or vehicle.

5. *Names and locations of dairies to be furnished.*—All persons engaged in the sale, delivery, or distribution of milk in the city of Newton shall furnish the board of health, upon blanks provided for the purpose, a list of the names and locations of the dairy farms from which the milk so distributed is obtained, and shall, before making any changes in their supply, notify the board of health of such intended changes. Any person neglecting to comply with this regulation or dispensing milk from any dairy whose milk has been excluded from the city, shall have his license revoked.

6. *Conditions under which cows shall be kept.*—No milk shall be produced, brought into, held, delivered, sold, or offered for sale in the city of Newton from cows not properly cared for, or kept in any stable which is not at all times kept in a clean and wholesome condition, nor at any dairy refusing inspection by the board of health.

The cows shall at all times be kept in a clean condition, the udders shall be washed or wiped with a clean, damp cloth just previous to milking, and the milker's hands shall be clean and dry. No privy vault or water-closet shall be allowed in any building where cows are kept, unless separated from the other parts of the building in a manner satisfactory to the board of health: no horses shall be kept in the same building unless

separated from the cows by a partition satisfactory to the board of health, nor shall horse manure be used for bedding. The cows shall not be fed upon swill, and at least 400 cubic feet of air space shall be allowed for each cow.

7. *Milk from sick cows.*—No milk from any sick or diseased cow, nor from cows within 15 days before or 5 days after parturition, shall be brought into, held, delivered, sold, or offered for sale in the city of Newton.

8. *Dairy inspections.*—No milk from any dairy refusing to allow an inspection by the board of health, as to equipment and methods used in producing milk, shall be brought into, held, delivered, sold, or offered for sale in the city of Newton. A permit will be issued to every dairy desiring to send milk into the city of Newton after an approved inspection has been made, and a permanent dairy number will be assigned to each dairy to be used by dealers and the board of health for purposes of identification.

9. *Milk to be cooled at once.*—All milk produced for the purpose of sale in the city of Newton shall be strained and cooled to 50° F. as soon as it is drawn from the cow, but shall not be cooled in any trough used for watering animals or in any other manner not approved by the board of health.

10. *Milk room.*—All persons engaged in the sale, delivery, or distribution of milk, except in stores, bakeries, or markets, shall provide a separate room well lighted, ventilated, and properly screened, in such location as is approved by the board of health, in which the bottling, handling, and storage of milk is carried on. Unless otherwise allowed by the board, the minimum requirements shall be a cement floor with proper drainage connections, smooth tight walls and ceiling, a tank supplied with running hot and cold water for washing utensils, facilities for washing and cleansing milk bottles, bottle filler, and facilities for keeping the daily supply of milk at a temperature below 50° F. The room and appliances shall be kept clean, shall not be used for other purposes, nor shall milk bottles be filled in any other place than a properly equipped milk room.

All bottles filled with milk for sale shall have a properly fitting stopper.

11. *Vessels used for milk not to be used for other purposes.*—No vessel used for holding or conveying milk for sale shall at any time be used for holding or conveying any other substance whatsoever.

12. *Stores, markets, etc., where milk is sold.*—No license will be issued for the sale of milk in any store, shop, market, bakery, or similar establishments until an inspection satisfactory to the board of health has been made. All milk so kept for sale shall be maintained at a temperature not higher than 50° F. and stored in a suitable covered cooler, box, or refrigerator. No vessel containing milk for sale shall be allowed to stand outside such cooler, box, or refrigerator, except while a sale is being made. All utensils used in the sale or handling of milk shall be properly cleansed or sterilized before being used again for the same purpose.

13. *Care of milk on dairy farms.*—No person engaged in the business of producing milk to be sold or distributed in the city of Newton shall store, cool, mix, or strain such milk in any room which is occupied by horses, cows, or other animals, or used for the storage of manure, or in any room used in whole or in part for domestic or sleeping purposes. All rooms in which milk is stored, cooled, mixed, or strained shall be kept clean at all times to the satisfaction of the board of health, and all utensils actually employed in the storage, sale, or distribution of milk shall be washed with boiling water or sterilized with live steam before they are again used.

14. *Urinals, swine, etc.*—No urinal, water-closet, or privy shall be located in any room or rooms used for the storage and care of milk or so situated as to pollute the atmosphere of such rooms, and all privy vaults shall be so constructed as to prevent leakage upon the surface of the ground and be protected against flies. No swine shall be kept within 50 feet of a stable or room in which milk is produced, handled, or stored. Manure shall not be stored in any room where cows are kept nor in any manner or location liable to contaminate the milk.

15. *Communicable diseases in persons engaged in handling milk.*—Every person engaged in the production, storage, transportation, sale, delivery, or distribution of milk shall immediately notify the board of health of the occurrence of any case of communicable disease either in himself, his family, or among his employees or their families, or in any building where milk is stored, sold, or distributed.

No person having a communicable disease or living in a building where such disease exists, shall milk or handle any cow used for producing milk intended for sale, or handle any vessel used for such milk or in any way take part or assist in handling such milk until the board of health shall certify in writing that it is safe for him so to do.

No milk produced upon premises in which there is a case of communicable disease shall be sold, distributed, or given away in the city of Newton until the board of health shall certify in writing that it is safe so to do.

No bottle, can, or vessel for the reception of milk for sale shall be removed from any tenement or dwelling in which there is a case of communicable disease without the written consent of the board of health and under such conditions as it shall impose.

NOTE.—The board of health considers diphtheria, scarlet fever, septic sore throat, tonsillitis, tuberculosis, typhoid fever, and paratyphoid fever to be communicable diseases within the meaning of the above section.

The board of health considers the word "milk" as used in chapter 3 to include whole cow's milk, cream, skimmed milk, and buttermilk.

Stables and Disposal of Manure. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 4. 1. *Permit to erect.*—No person shall erect any stable in the city of Newton until he has presented a petition therefor upon a prescribed form to the board of health and received a permit from the said board.

NOTE.—This permit must be presented to the building commissioner when application is made for the building permit.

2. *Permit to use.*—No person shall use any building in the city of Newton as a stable until he has presented a petition upon a prescribed form to the board of health and been granted a license authorizing such use.

3. *Construction of stables.*—Every stable hereafter constructed in this city shall be provided with a suitable water-tight manure pit, unless the manure is removed daily in a manner satisfactory to the board of health. The stable shall be properly ventilated; the gutters and washstand properly connected with the sewer, unless otherwise allowed by the board of health, and the whole built in a manner satisfactory to the board of health.

4. *Manure not to be allowed to accumulate.*—No owner or occupant of a stable shall allow quantities of manure exceeding two cords to accumulate in or near said stable, and no manure shall be allowed to accumulate or remain uncovered outside of a stable building.

5. *Manner of removing manure.*—No person shall remove or carry any manure through any public or private street except in a proper vehicle and in such a manner that no manure shall be dropped on the street.

6. *Manure pits to be emptied.*—Manure pits shall be emptied at least once in 10 days from April 1 to November 1, unless the same are so constructed as to be proof against the entrance of flies.

7. *Gutters and runways to be kept clean.*—All gutters, stalls, runways, and floors shall be kept clean and free from accumulations of manure, and shall be treated with chloride of lime or other suitable disinfectant at least once in every 10 days.

8. *Permits revocable.*—Every permit granted for the occupation of a stable may be revoked at any time when it shall appear to the board of health that such revocation is necessary for the public health and safety or that the conditions of the permit have been violated.

Domestic Animals—Keeping of. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 5. 1. *License necessary for keeping.*—No person shall keep any goats, swine, cattle, or live fowl until he has filed an application upon a prescribed form with the board of health and received a license from the board of health. Such license shall contain a statement of the number and kind of creature licensed and such other conditions as may be required by the board of health.

2. *Live fowl not to be kept in dwelling.*—No person shall keep any live fowl in any building used as a dwelling.

3. *Permits revocable.*—All permits granted for the keeping of goats, swine, live fowl, or cattle may be revoked at any time when it shall appear to the board of health that such revocation is necessary for the public health and safety or that the conditions of the permit have been violated.

Foodstuffs—Sale of—Protection. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 6. 1. *Tainted food.*—No person shall sell or have in possession with intent to sell any tainted, unsound, rotten, or partly decomposed meat, fish, vegetables, or fruit, or any food product that is kept fresh by the addition of any preservative.

2. *Protection from flies.*—No person shall expose or have in possession with intent to sell any meat, fish, poultry, game, breadstuffs, cakes, pastry, candy, vegetables, fruit, dried fruits, or shelled nuts outside of any building, nor in any open window or doorway unless the same be so covered with clean material or so placed as to be protected against flies, animals, or any other contaminating influence.

3. *Protection against animals.*—No person shall expose any fruit, vegetables, or other foodstuffs intended for sale, outside of any store, market, or place of sale, unless the stand or bottom of the container is at least 2 feet above the level of the sidewalk.

4. *Food not to be kept in living rooms.*—No foodstuffs intended for sale shall be kept or stored in any room used for living or sleeping purposes.

5. *Refrozen ice cream.*—No person shall sell or offer for sale any refrozen ice cream.

6. *Premises, etc., to be kept clean.*—Premises, compartments, rooms, receptacles, and ice chests used for the storage, manufacture, or sale of foodstuffs shall be kept cleansed in a manner satisfactory to the board of health and be at all times open to inspection by the authorized agent or agents of the board.

7. *Carcasses of fowl to be plucked.*—No carcass of any hen, chicken, turkey, duck or goose shall be brought into or exposed for sale in the city of Newton unless the feathers have been removed from the carcass before the same is brought into the city.

8. *Water-closets.*—No water-closet, earth closet, or privy shall be within or communicate directly with any room used for the manufacture, storage, or sale of food.

Privies and Cesspools—Construction, Location, and Disposal of Contents—Connections with Sewers—Water-Closets. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 7. 1. *Buildings to be provided with suitable privy vault or water-closet.*—No person shall occupy or permit others to occupy any building owned by him as a dwelling, tenement, or lodging house, unless such building is provided with a suitable water-tight privy or with a water-closet, nor unless every water-closet, sink, set bowl, slop hopper, or like fixture is properly trapped and connected with a water-tight soil pipe of sufficient size to carry off the contents of such water-closet or fixture to a cesspool or sewer. Every building used as a tenement for more than one family shall be provided with at least one privy vault or water-closet for each family.

2. *All water-closets to be provided with suitable flushing apparatus.*—Every building occupied or let as a dwelling house and connected with a public or private sewer or cesspool shall be provided with sufficient water-closets provided with proper light and ventilation and kept at all times supplied with water by a proper system of pipes running thereto and maintained in working order, and every building so occupied

and connected in which water-closets are not supplied and maintained in accordance with this regulation shall, on the order of the board of health, be forthwith vacated and shall not again be occupied or let as a dwelling until so supplied.

3. *Privy vaults and cesspools not to be built without a permit.*—No person shall build or cause to be built any privy vault or cesspool without permission of the board of health, and unless such privy vault or cesspool is constructed in a thorough and substantial manner, lined with stone, brick, or other suitable material of sufficient thickness and strength to prevent the walls from falling in, and located so that the inside of the same shall be at least 3 feet distant from the line of any adjoining lot or street and at least 20 feet distant from the bank of any pond, drain, or water course. Every cesspool shall be of sufficient size to contain at least 80 cubic feet, measured from a level 18 inches below the surface of the ground, and when not water-tight shall be at least 20 feet from the outside of the cellar wall of any tenement or dwelling and 30 feet distant from any well, spring, or any other source of water supply used for culinary or domestic purposes.

4. *Privy vaults and cesspools to be kept in proper repair and emptied when required by the board of health.*—The owner or occupant of premises in which there is any private sewer, drain, privy vault, or cesspool shall cause the same to be kept in thorough repair. Every privy vault and cesspool shall be emptied and cleansed whenever required by the board of health. If the owner or occupant of any tenement or building neglects to empty and cleanse a privy vault or cesspool connected therewith within 48 hours after notice to do so, the board of health may have the same emptied and cleansed and have the expense thereof collected from the owner.

5. *Privy vaults and cesspools when discontinued to be filled with proper material.*—The owner or occupant of premises in which there is any privy vault or cesspool, the use of which is discontinued, shall cause the same to be emptied of its contents, and filled with earth, sand, gravel, or ashes.

6. *Privy vaults and cesspools not to be emptied without permission from the board of health.*—No person shall empty any cesspool or privy vault, or carry or empty any night soil or other offensive matter in any street or near any house except by permission of the board of health.

7. *Buildings to be connected with the sewer.*—Every building situated on a public or private street, course, or passageway in the city of Newton, in which there is a public sewer, shall be connected by a good and sufficient particular drain with such public sewer when required by the board of health.

8. *Catch basins to be used in certain cases.*—No person shall discharge any contents of any privy vault, manure pit, or carriage wash into a sewer except through an intervening catch-basin, the outlet pipe of which shall be high enough above the bottom to prevent any but liquid contents from passing over into the sewer. A sufficient trap shall be placed in every private drain connecting such catch-basin with a sewer.

Buildings and Premises—Sanitary Regulation. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 8. 1. *Rubbish, etc., to be removed.*—Every owner and every occupant of any building or premises in or upon which is any dead animal, rubbish, or filth of any kind, shall when ordered by the board of health remove the same within such time as shall be stated in the order.

2. *Manure; how to be used.*—No owner or occupant of land shall permit decaying animal or vegetable matter, contents of vaults, privies, or cesspools to remain thereon for purposes of fertilization without being immediately ploughed in or otherwise rendered inoffensive.

NOTE.—Nothing in the above section shall be construed to prevent the use of well-rotted manure as top dressing; the spreading of manure upon land used for agricultural purposes when the same is to be ploughed under, nor the storing of manure upon fields in localities devoted to farming.

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CHAP. 18. 1. *Refuse, etc., in dwellings.*—No old rags, old papers, or other refuse material shall be brought into or allowed to remain within any building used as a dwelling, if gathered from any place outside such building.

Nuisances. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 8. 3. *Rubbish, etc., not to be thrown in streets, etc.*—No person shall throw into or leave in or upon any street, court, square, lane, alley, public inclosure, or any pond, stream, or body of water within the limits of the city any dead animal, rubbish, or filth of any kind, or any refuse, fish, animal or vegetable matter whatsoever.

4. *Drainage and filth not to be allowed to run out on the surface of the ground.*—No owner or occupant of any tenement or building shall permit any sewage, garbage, contents or drainage of a privy vault or cesspool, or sink drain, or other filth from said tenement, building, or premises, to empty on the surface of the ground or enter into any drain, brook, stream, or pond of water.

Garbage and Refuse—Collection of. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 9. 1. *How to be kept.*—All house offal and refuse animal or vegetable substances shall be placed in suitable water-tight vessels and kept in a place convenient for removal by persons duly authorized by the board of health. Such vessels shall be kept covered and not permitted to become offensive.

2. *Suitable receptacles to be provided.*—The owner, agent, or lessee of every building occupied as a dwelling by three or more families shall provide suitable receptacles for ashes, rubbish, and garbage, and shall not allow any ashes, rubbish, or garbage to be thrown in or about the yard or premises.

3. *House offal and garbage not to be removed without permit.*—No person unless authorized by the board of health shall handle, disturb, or remove the contents of any receptacle for ashes, garbage, or rubbish of any kind placed in yards, passageways, or public or private streets.

Grease—Collection of. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 10. 1. *Permit for.*—No person shall remove from any dwelling house or other place any grease or refuse fatty matter without first obtaining a permit so to do from the board of health. Said permit must be renewed annually on the 1st of May.

Spittoons in Factories. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 11. 1. *Spittoons.*—The board of health hereby recommends the following as a spittoon for factories in accordance with section 2, chapter 503 of the acts of 1907: The spittoon to be of metal or hard glazed pottery or of such other nonabsorbent material as may be satisfactory to the board of health, with sides not less than $3\frac{1}{2}$ inches high and with an opening not less than 5 inches in diameter.

2. *Number.*—The number of spittoons required shall be determined for each factory individually, but shall not be less than one for every 6 male and one for every 20 female employees.

Schools—Medical Inspection of Pupils. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 12. 1. *Inspection.*—The schools of the city shall be inspected medically under the direction of the board of health, in a manner to conform with the requirements of the law and the regulations of the board of health.

2. *Medical inspectors to act as agents.*—The medical inspectors of schools are hereby made agents of the board of health for the purpose of compelling the observance of its requirements and are given the powers necessary to enforce their authority.

Barbers and Barber Shops. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 13. 1. *To be kept in cleanly condition, etc.*—Every barber shop and the furniture and utensils therein shall be kept at all times in a cleanly condition. Mugs; shaving brushes, and razors shall be cleaned by immersion in boiling water after every separate use thereof. A separate clean towel shall be used for each person. Alum or other material used to stop the flow of blood shall be so used only in powdered form and applied on a towel. The use of powder puffs and sponges is prohibited. Every barber shop shall be provided with running hot and cold water. No person shall be allowed to use any barber shop as a dormitory. Every barber shall cleanse his hands thoroughly immediately after serving each customer. A copy of these regulations shall be conspicuously displayed in every barber shop in the city.

Bakeries—Construction of. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 14. 1. *Buildings occupied as bakeries.*—All buildings which are occupied as biscuit, bread, or cake bakeries shall be properly drained and plumbed. They shall be provided with a proper washroom and water-closets, having ventilation apart from the bake room or rooms where food products are manufactured; and no water-closet, earth closet, privy, or ash pit shall be within or communicate directly with the bake room of any bakery.

2. *Rooms to be kept clean.*—Every room which is used for the manufacture of flour or meal food products shall, unless otherwise permitted by the board of health, have an impermeable floor constructed of cement or tiles laid in cement, and an additional floor of wood properly saturated with linseed oil.

The walls and ceiling of such room shall be plastered or wainscotted, and, unless otherwise permitted by the board of health, shall be whitewashed at least once in three months.

The furniture and utensils therein shall be so arranged that they and the floor may at all times be kept clean and in good sanitary condition.

3. *Separate sleeping rooms required.*—The sleeping rooms for persons who are employed in a bakery shall be separate from the rooms in which flour or meal products are manufactured or stored.

4. *Storing of manufactured products.*—The manufactured flour or meal food products shall be kept in perfectly dry and airy rooms so arranged that the floors, shelves and all other facilities for storing the same can be easily and perfectly cleaned.

Hawkers and Peddlers—Registration—Vehicles—Sale of Articles. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 15. 1. *Must be licensed.*—No person shall hawk, peddle or expose for sale any of the articles enumerated in section 15 of chapter 65 of the Revised Laws of the Commonwealth as amended by chapter 345 of the acts of 1906, until he has recorded his name and residence with the inspector of provisions and received a record number and a license from said inspector.

The fee for such record shall be \$1 payable on issuing the license and annually on the first Monday of April in each year thereafter.

2. *Requirements for registration.*—No person shall be registered until he has given proof that he is over 21 years of age and of good moral character. In the case of non-residents a letter from the chief of police or a police officer of his place of residence, stating that he is personally acquainted with the applicant and knows him to be of good moral character, must be presented to the inspector of provisions.

3. *How to be carried.*—Said articles shall be so carried and conveyed that they shall not tend to injure or annoy the public health or comfort and only in vehicles and receptacles which do not leak.

4. *Vehicles to be numbered.*—Every such vehicle or receptacle shall have the name and number of the person selling painted thereon in letters and figures at least 2 inches in size. Every such vehicle or receptacle shall be kept neat and clean within and without and shall be submitted to the inspection of the inspector of provisions on the first Mondays in April and October in each year, and at such other times as said inspector shall require. Failure to so submit such vehicle or receptacle on said days of inspection and whenever required by said inspector may be deemed sufficient cause for revocation of the license.

5. *Peddlers shall not cry their wares unduly.*—No person so exposing for sale or selling said articles shall cry his wares to the disturbance of the peace and comfort of the inhabitants of the city.

6. *Penalty.*—Whoever violates any of the provisions of this ordinance shall be liable to a penalty not exceeding \$20 for each offence.

Medical and Surgical Chests—Required in Factories. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 16. 1. Every person, firm, or corporation operating a factory or shop where machinery is used for any manufacturing purpose or for any other purpose except for elevators or for heating or hoisting apparatus, shall at all times keep and maintain free of expense to the employees, a full set of the following articles, the same to be kept in a suitable dust-proof case:

First-aid packages, one or more.

Gauze bandages (4 inches, 3 inches, and 2 inches wide), at least two of each.

Sheet wadding (1 piece).

Canton flannel (1 yard).

Safety pins.

Tourniquet.

Splint wood.

Adhesive plaster (one 10-yard roll, 2 inches wide).

Forceps, 1 pair.

Scissors, 1 pair.

Boric acid ointment (1 tube).

Aromatic spirits of ammonia, 1 ounce.

Creolin, sulpho-naphthol or any recognized antiseptic in liquid or tablet form.

One basin.

Lodging Houses and Tenements—Registration of Owner and Agent—Overcrowding Prohibited. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 17. 1. *Registration.*—Every owner and agent or person having charge of a tenement or lodging house shall register his name and address with the board of health, and shall have legibly posted on the wall or in the entry of such tenement or lodging the name and address of the owner and of the agent or person having charge of the same.

2. *Air space.*—No owner, agent or person having charge of a tenement or lodging house shall permit more than one person for every 400 cubic feet of air space to occupy any one room in such tenement or lodging house.

Spitting—Prohibited in Public Places. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 18. 2. *Spitting in street cars, etc.*—No person shall spit upon the floor, platform or any other part of a public conveyance, nor upon the floor, steps, or stairs of any public building, hall, church, railway station, or shop, nor upon the sidewalk of any public or private street nor upon the pathway of any park, square, or common.

Street Cars—Cleaning and Ventilation. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 18. 3. *Cleaning of street cars.*—Every closed street railway passenger car operated in Newton shall be properly ventilated while in operation and shall be properly aired at the end of each round trip. It shall also be cleaned at the end of each day's run in such manner as the board of health may direct or approve.

Manicuring, Massaging, and Giving of Vapor Baths—Licenses. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 18. 4. *Manicures, etc.*—No person shall be licensed under the provisions of chapter 443 of the acts of 1911 until the applicant has presented evidence satisfactory to the board of health that he or she is at least 21 years of age, of good moral character, and competent to practice the calling. All such licenses shall expire on June 1 of each year, unless previously revoked.

Penalty. (Reg. Bd. of H., Mar. 15, 1915.)

CHAP. 19. 1. *Penalty for violation.*—Whoever shall violate any provision of the preceding rules shall be liable to a fine not exceeding \$100.

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